CURRENT TRENDS IN LINGUISTICS

Edited by

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Research Center for the Language Sciences
Indiana University

VOLUME 9

Linguistics in Western Europe

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EDITOR'S INTRODUCTION

In a statement issued by the (Pugwash) Conference on Science and World Affairs, meeting in Karlovy Vary, Czechoslovakia, in September, 1964, we read: 'Proliferation of scientific literature raises one of the greatest obstacles facing efficient advancement of science today.... An urgent need has arisen for the development of a world-wide, systematic, coordinated and, as far as possible, integrated effort to store and retrieve scientific information. The existing abstracting services and systems for machine coding and indexing cover limited areas of scientific information; they are being developed independently so that information stored in one of them is not freely exchangeable with that stored in others.' Responding to the challenge implied, the 1966 General Assembly of the International Council of Scientific Unions (ICSU) and the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) approved proposals for a joint study of the feasibility of a world scientific information system. The report of this study, known as UNISIST (United Nations scientific and technical information), is being published by UNESCO as I am composing this Introduction. Among its twenty-one recommendations — many of which have a good chance of being successfully implemented, if for no other reason because of compelling economic realities — there is an underlying concern with practical methods for reviewing, evaluating, and compacting newly generated information. In the unanimous opinion of the UNISIST study group, the 'gate-keeping' functions which editors and other referees perform for science should be strengthened; efforts to maintain high standards for the published literature must be unrelenting.

During this past decade, our own discipline has, it seems, gone the other way: the communication network that has, octopus-like, enmeshed linguistics in this period has an alarmingly growing component that typically assigns primary responsibility for quality control to the author, with minimal, if any, editorial processing. All of us are inundated with so-called working papers, emanating from departments and other centers of linguistic activities of varying degrees of respectability, containing quantities of seldom digestible — if sometimes appetizingly packaged and labeled — pulp. As Amitai Etzioni remarked in a recent *Science* editorial, calling for quality filters in information systems: 'Any paper that meets some very loosely defined criteria...is circulated, and the potential user is provided with no clues as to the relative merit of each item. It might seem that the user would be delighted at having all the material

he wishes at his fingertips, but actually much of his time is being wasted as *a high proportion of the material circulated and retrieved is without discernible value*' (emphasis in the original, in Vol. 171, No. 3967, January 15, 1971).

The *Current Trends* series was basically conceived and designed as a kind of *ad hoc* system of quality filters, to provide the linguistic community with one trustworthy device for restraining — if not curing — the cancerous spread of unneeded information. The prescription — which I have described in my Introductions to previous volumes — is extremely simple: each article is assigned to the best available scholar for any given subject, as determined by the Editorial Board for that volume, and then the prime quality control for that particular topic becomes his responsibility.

Since the appeareance, in 1971, of Vol. 6, *Linguistics in South West Asia and North Africa*, Vol. 7, *Linguistics in Sub-Saharan Africa*, and Vol. 8, *Linguistics in Oceania*, several modifications have been made in the over-all plan of the series, and I should like now to recapitulate its status as a whole.

Since the reviews of Vols. 1-4 listed in my Introductions to Vols. 6 and 8 have appeared, I have profited from that by Wolfgang Veenker, of Vol. 1, in *Ural-Altaische Jahrbücher* 42.231-8 (1970), and that by Gyula Décsy, of Vol. 3, *Ibid.* 238-44. Another valuable account of Vol. 4, by Carlos Patiño Rosselli, was published in the *Thesaurus* of the *Boletin del Instituto Caro y Cuervo* 24/3. 1-6 (1969).

Vol. 10, *Linguistics in North America*, and Vol. 11, *Diachronic, areal, and typological linguistics*, are both in press, and will undoubtedly appear in 1972.

Vol. 12, *Linguistics and adjacent arts and sciences*, has expanded to colossal bulk partly due to the vastness of the coverage, but also, in part, because of the exceptionally exhaustive treatment of several of the subjects included. Although some of the articles are already in press, others are still being edited at this time. We now envisage a book, in at least three separate tomes, of some 2,500 pages, in the standard format of this series.

As originally conceived, Vol. 12 was to have included a single collaborative chapter, by Edward Stankiewicz and Dell Hymes, on 'Current trends in the historiography of linguistics'. The absurdity of the task soon dawned upon all of us concerned. Accordingly, we have added an entirely separate volume to the series, Vol. 13, *Current trends in the historiography of linguistics*, the table of contents of which features some twenty-five chapters, by as many different authors of international renown. The Associate Editors, with whose collaboration this book was planned, include, in addition to Hymes and Stankiewicz, Hans Aarsleff (Princeton University), Robert Austerlitz (Columbia University), and Luigi Romeo (University of Colorado); each of the five will also contribute a chapter and, in addition, Stankiewicz has taken the initiative for a bibliography of historical writings on Western linguistics since 1945.

The Index to *Current Trends in Linguistics, Vols. 1-13*, much discussed in previous Introductions, will thus become Vol. 14 of the series, instead of as announced earlier. As conceived at the moment, it will be an in-house project of the publisher's.

In the Introduction to Vol. 7, I summarized the support of the U.S. Office of

Education, for Vols. 4-7 and 11-12, totalling $265,186; and in Vol. 8, I summarized the support of our National Science Foundation, for Vols. 1-3, 8, and (partially) 10, totalling $130,602. Vol. 9 was supported by the Air Force Office of Scientific Research, by Contract No. F44620-68-C-0046, with the Center for Applied Linguistics, in the amount of $49,046. Thus the grand total of AFOSR, NSF, and USOE aid to the series so far amounts to $444,834. The assistance of yet a fourth agency of our government, the National Endowment for the Humanities, and of several foreign sources, will be detailed in forthcoming Introductions where pertinent.

Since the commissioned article on Romanian linguistics had to be dropped from Vol. 1, at the last minute, I am happy to see an excellent one appear here instead, however incongruously from an areal standpoint. Professors Marcus and Slama-Cazacu were also gracious enough to extend their respective coverages, for the sake of completeness, to Eastern Europe.

It is frustrating to have to exclude from Vol. 9 — as it had to be from Vol. 5 — a treatment of Gypsy linguistics, because the respective Editorial Boards failed to approve the manuscripts that were submitted.

Many of the chapters had to be translated from French, German, Italian, or Spanish; acknowledgements are variously due to the following translators: Jeannette Clausen, Serge Davidenkoff, Kathleen Fenton, Laurence Gretsky, Janet Hadda, Donald Lenfest, Jean Umiker, William Wieland, and Richard Zacharias.

Professor Marvin I. Herzog's over-all help with the translation and editing of the chapter on Yiddish was truly indispensable, as was also Professor Curtis Blaylock's similar assistance with the chapter on Catalan.

Finally, I want to express my warmest gratitude to Professor William G. Moulton for his contribution at very short notice, upon the tragic loss of Emil Petrovici, who had originally taken on this assignment, but whose paper was still incomplete when he died. Let this book be dedicated to his memory.

Bloomington, April 1, 1971 THOMAS A. SEBEOK

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MASTER LIST OF ABBREVIATIONS

AAAd	*Archivio per l'Alto Adige* (Florence).
AAHG	*Anzeiger für die Altertumswissenschaft*. Herausgegeben von der Österreichischen humanistischen Gesellschaft (Innsbruck).
AaNO	*Aarbøger for nordisk Oldkyndighed og Historie* (Copenhagen).
AAntH	*Acta Antiqua Academiae Scientiarium Hungaricae* (Budapest).
AAPSzeged	*Acta Academiae paedagogicae Szegediensis — Series paedagogica et psychologica* (Szeged).
AASF	*Suomalaisen Tiedeakatemian Toimituksia/Annales Academiae Scientiarum Fennicae, Series B* (Helsinki).
AAT	*Atti della Accademia delle Scienze di Torino, Classe di scienze storiche e filologiche* (Turin).
AAWL	*Abhandlungen der Akademie der Wissenschaften und der Literatur in Mainz, Geistes- und Sozialwissenschaftliche Klasse* (Wiesbaden).
ABAW	*Abhandlungen der Bayerischen Akademie der Wissenschaften, Philosophisch-historische Klasse* (Munich).
AbPAW	*Abhandlungen der Preussischen Akademie der Wissenschaften* (Berlin).
AC	*L'Antiquité Classique* (Louvain).
ACILR 10	*Actes du Xe Congrès international de linguistique et philologie romanes, Strasbourg 23-28 avril 1962*. 3 vols. Paris, Klincksieck, 1965.
ACLS	*American Council of Learned Societies Newsletter* (New York).
Acme	*Annali della Facoltà di Filosofia e Lettre dell'Università Statale di Milano* (Milan).
AcOr	*Acta Orientalia*. Ediderunt Societates Orientales Danica Norvegica Svecica (Le Monde Oriental) (Copenhagen).
ADA	*Anzeiger für deutsches Alterum und deutsche Literatur* (Wiesbaden). (Supplement to ZDA.)
ADAW	*Abhandlungen der Deutschen Akademie der Wissenschaften zu Berlin, Klasse für Sprachen, Literatur und Kunst* (Berlin).
Aegyptus	*Aegyptus* (= *Revista Italiana di Egittologia e di Papirologia*, Milan).
AEM	*Anuario de Estudios Medievales* (Barcelona).
Aevum	*Aevum* (= *Rassegna di scienze filologiche, linguistiche e storiche*, Milan).
AFLT	*Annales publiées par la Faculté des Lettres de Toulouse* (Toulouse).
AfO	*Archiv für Orientforschung* (= *Internationale Zeitschrift für die Wissenschaft vom Vorderen Orient*, Graz).
AfrAb	*African Abstracts*. A Quarterly Review of Ethnological, Social and Linguistic Studies appearing in current periodicals/Bulletin analytique africaniste (London).
Africa	*Africa* (= *Journal of the International African Institute*, London).
AfrLS	*African Language Studies* (London).
AGI	*Archivio Glottologico Italiano* (Florence).
AILA Bulletin	*Bulletin of the International Association for Applied Linguistics* (Danderyd, Sweden).
AILC	*Anales del Instituto de Lingüistica de Cuyo* (Mendoza, Argentina).
AION-G	*Annali, Istituto Universitario Orientale, Sezione Germanica* (Naples).

AION-L	*Annali, Istituto Universitario Orientale, Sezione Linguistica* (Naples).
AION-R	*Annali, Istituto Universitario Orientale, Sezione Romanza* (Naples).
AION-S	*Annali, Istituto Universitario Orientale, Sezione Slava* (Naples).
AIS	*Sprach- und Sachatlas Hallieng und der Südschweiz.*
AIV	*Atti dell'Istituto Veneto di Scienze, Lettre ed Arti, Classe di Scienze morali e lettere* (Venice).
AJA	*American Journal of Archeology* (New York).
AJMenD	*American Journal of Mental Deficiency* (Willimantic, Connecticut).
AL	*Acta Linguistica Hafniensia* (= *International Journal of Structural Linguistics*, Copenhagen).
ALA	*Atlante linguistico delle Alpi* (Turin).
Al-An	*Al-Andalus* (= *Revista de las Escuelas de estudios árabes de Madrid y Granada*, Madrid and Granada).
Albania	*Albania* (Brussels and London).
ALC	*L'Atlas linguistique de la France: Corse.*
ALEA-P	*Publicaciones del Atlas Lingüistico* [*etnografico*] *de Andalucia* (Granada).
ALF	*L'Atlas linguistique de la France.*
ALFUP	*Atti del Laboratorio di Fonetica dell'Universita di Padova* (Padva).
ALH	*Acta Linguistica Academiae Scientiarum Hungaricae* (Budapest).
ALI	*Atlante Linguistico Italiano* (Turin).
ALL	*Archiv für lateinische Lexicographie und Grammatik* (Leipzig).
ALM	*Atlante Linguistico Mediterraneo.*
ALMA	*Archivum Latinitatis Medii Aevi.* Bulletin Du Cange (Brussels).
AlmÖAW	*Almanach der Österreichischen Akademie der Wissenschaften* (Vienna).
ALPI	*Atlas Lingüistico de la Península Ibérica.*
ALPO	*Atlas linguistique des Pyrenees-Orientales* (Paris). 1966.
ALR	*Atlasul Linguistic Român*/*Atlasul Lingvistic Romîn* (Bucharest).
ALUOS	*The Annual of the Leeds University Oriental Society* (Leiden).
AM	*Asia Major* (London).
AmA	*American Anthropologist* (Menasha, Wisconsin).
AmADeaf	*American Annals of the Deaf* (Washington, D.C.).
AMAT	*Atti e Memorie dell'Accademia Toscana di Scienze e Lettre 'La Colombiana'* (Florence).
AMCILR	*Actas Memorias del VII Congreso de Lingüistica Romanica*, 1953. Barcelona, 1955 (1957).
AMCISO VII	*VII Congresso internazionale di scienze onomastiche.* Atti del congresso e memori dela sezione toponomastica. Florence, 1962-63.
AMPs	*Annales médico-psychologiques* (Paris).
AnnBret	*Annales de Bretagne* (= *Revue publiée par la Faculté des Lettres de Rennes*, Rennes).
AnnIPhO	*Annuaire de l'Institut de Philologie et d'Histoire orientales et slaves* (Brussels).
AnnMAfrC	*Annales, Musée Royal de l'Afrique Centrale, Sciences humaines*/*Annalen, Koninklijk Museum voor Midden-Afrika, Wetenschappen van de mens* (Tervuren, Belgium).
AnnMidi	*Annales du Midi* (Toulouse).
AnnNorm	*Annales de Normandie* (Caen).
AnnThijm	*Annalen van het Thijmgenootschap* (Utrecht).
AnnUP	*Annales de l'université de Paris* (Paris).
ANPE	*Annales Neérlandaises de Phonétique Expérimentale* (Amsterdam).
AnPs	*L'année psychologique* (Paris).
ANPsyBel	*Acta Neurologica et Psychiatrica Belgica* (Brussels).
Anthropos	*Anthropos* (= *Revue internationale d'ethnologie et de linguistique*/*Internationale Zeitschrift für Völker- und Sprachenkunde*, Freiburg, Switzerland).
Antiquity	*Antiquity.* A Quarterly Review of Archaelogy (Cambridge).
AntJ	*The Antiquarian Journal.* Being the Journal of the Society of Antiquaries of London (London).
ÅNVA	*Det norske videnskaps-akademi:* Oslo, Årbok (Oslo).
AO	*Archiv Orientální.*

AÖAW	*Anzeiger der Österreichischen Akademie der Wissenschaften, Philosophisch-historische Klasse* (Vienna).
AOH	*Acta Orientalia Academiae Scientiarum Hungaricae* (Budapest).
AOR	*Annuari de l'Oficina Romànica de Lingüistica i Literatura* (Barcelona).
AORLBelg	*Acta oto-rhino-laringologica Belgica* (Brussels).
APCILA	*Actes du Premier Coloque International de Linguistique Appliquée, 26-31 octobre 1964, Nancy* (= *Annales de l'Est, Publiées par la Faculté des Lettres et des Sciences humaines, de l'Université de Nancy*. Memoire no. 31). 1966.
APhS	*Acta Philologica Scandinavica* (= *Tidsskrift for nordisk sprogforskning*, Copenhagen).
APsNP	*Archivio di psicologia, neurologia e psichiatria* (Milano).
AR	*Archivum Romanicum* (Florence).
A&R	*Atene e Roma* (= *Rassegna trimestrale dell'Associazione Italiana di Cultura Classica*, Messina and Florence).
Arabica	*Arabica* (= *Revue d'études arabes*, Leiden).
Arbor	*Arbor* (= *Revista general de investigacion y cultura*, Madrid).
Arch	*Archivum* (= *Revista de la Facultad de Filosofia y Letras, Universidad de Oviedo*, Oviedo).
ArchASJE	*Archiv za arbanasku starinu, jezik i etnologiju* (Belgrade).
ArchD	*Archiv für Diplomatik, Schriftgeschichte, Siegel- und Wappenkunde* (Cologne and Graz).
ArchFAr	*Archivo de Filologia Aragonesa* (Saragossa).
ArchGPs	*Archiv für die gesamte Psychologie* (Leipzig).
ArchK	*Archiv für Kulturgeschichte* (Marburg).
ArchL	*Archivum Linguisticum*. A Review of Comparative Philology and General Linguistics (Glasgow).
ArchP	*Archeion Pontou* (Athens).
ArchPs	*Archives de psychologie* (Geneva).
ArchPsN	*Archiv für Psychiatrie und Nervenkrankheiten*. (Incorporating ZGNPs) (Berlin).
ArchPsy-B	*Archiv für Psychiatrie* (Berlin).
ArchSSL	*Archiv für das Studium der neueren Sprachen (und Literaturen)* (Braunschweig).
ArchV	*Archiv für Völkerkunde* (Vienna).
ArchZ	*Archivalische Zeitschrift* (Munich).
Arkiv	*Arkiv för nordisk Fiologi* (Lund).
Arv	*Arv* (= *Tidskrift for nordisk folkminnesforskning/Journal of Scandinavian Folklore*, Uppsala and Copenhagen).
ASAW	*Abhandlungen der Sächsischen Akademie der Wissenschaften zu Leipzig, Philologisch-Historische Klasse* (Berlin).
ASGIM	*Atti del Sodalizio Glottologico Milanese* (Milan).
ASLU	*Acta Societatis Linguisticae Upsaliensis* (Uppsala).
ÅSLund	*Årsbok utgiven av Seminarierna i slaviska språk*. Jämförande språkforskning, finsk-ugriska språk och östasiatiska språk vid Lunds Universitet (Lund).
ASNP	*Annali della Sculoa Normale Superiore di Pisa*. Lettere, storia e filosofia (Florence).
ASNS [ASNSL]	*Archiv für das Studium der neueren Sprachen* [*und Literaturen* — beginning with vol. 56, 1876] (Brunswick).
ASoc	*L'Année Sociologique* (Paris).
AsS	*Asiatische Studien/Études Asiatiques* (Bern).
Athena	*Athena*. Syngramma periodikon tes en Athenais Epistemonikes Hetaireias (Athens).
Athenaeum	*Athenaeum*. Studi periodici di letteratura e storia dell'antichità (Pavia).
ATopPir	*Actas de la Reunión de toponimia pirenaica-Jaca, 1948* (Zaragoza). 1949. (= (I) RTP.)
AUB	*Analele Universităţii din Bucureşti. Seria Ştiinţe Sociale* (Bucharest).
AUC	*Acta Universitatis Carolinae* (Prague).
AUI	*Analele Ştiinţifice ale Universităţii 'Al. I. Cuza'. Secţiunea III* (Jassy).
AUMLA	*AUMLA* (= *Journal of the Australian Universities Language and Literature Association*, Christchurch, New Zealand).

AUO-Ph	*Acta Universitatis Palackianae Olomucenais, Facultas Philosophica* (Olomouc).
AUT	*Turun Yliopiston julkaisuja/Annales universitatis Turkuensis* (Aboensis) (Turku).
Aut Aut	*Aut Aut* (= *Revista di filosofia e di cultura*, Milan).
AUTim	*Analele Universităţii din Timişoara. Seria Ştiinţe Sociale* (Timişoara).
AuÜ	*Afrika und Übersee*. Sprachen, Kulturen. Folge der Zeitschrift für Eingeborenen-Sprachen (Berlin).
AVglPhon	*Archiv für Vergleichende Phonetik* (Berlin).
BAB	*Académie Royale de Belgique, Bulletin de la Classe des Lettres et des Sciences morales et politiques/Koninklijke Belgische Academie, Mededelingen van de Klasse der Letteren en der Morele en Staatkundige Wetenschappen* (Brussels).
Babel	*Babel* (= *Revue internationale de la traduction/International Journal of Translation*, Avignon).
BABL	*Boletín de la Academia de Buenas Letras* (Barcelona).
BAE	*Boletín de la Real Academia Espanola* (Madrid).
Baessler-Archiv	*Beiträge zur Völkerkunde*. Museum für Völkerkunde, Berlin-Dahlem (Berlin).
BAGB	*Bulletin de l'Association Guillaume Bude*. 4th série (Paris).
BALF	*Bulletin de l'Académie Royale de Language et Littérature Françaises* (Brussels).
BALI	*Bollettino dell'Atlante Linguistico Italiano* (Turin).
BalkE	*Balkansko ezikoznanie/Linguistique balkanique* (LingB) (Sofia).
BALM	*Bollettino dell'Atlante Linguistico Mediterraneo* (Venice and Rome).
BArch	*Balkan-archiv*. Fortsetzung des Jahresberichtes des Instituts für Rumänische Sprach (Leipzig).
BASc-Lisboa	*Academia das Sciencias*. Boletim da Classe de Letras (Segunda classe)/Boletim da segunda-classe (Lisbon).
BB	*Beiträge zur Kunde der indogermanischen sprachen* ("*Bezzenbergers Beiträge*").
BBCS	*Bulletin of the Board of Celtic Studies* (Cardiff).
BBMP	*Boletín de la Biblioteca de Menéndez y Telayo* (Santander, Spain).
BByzA	*Berliner Byzantinische Arbeiten*. Deutsche Akademie der Wissenschaften zu Berlin (Berlin).
BCH	*Bulletin de Correspondance Hellénique* (Paris).
BCLC	*Bulletin du Cercle linguistique de Copenhague* (Copenhagen).
BCO	*Bibliotheca Classica Orientalis*. Dokumentation der altertumswissenschaftlichen Literatur der Sowjetunion und der Länder der Volksdemokratie (Berlin).
BCSS	*Bollettino, Centro di Studi filologici e linguistici siciliani* (Palermo).
BCTD	*Bulletin de la Commission Royale de Toponymie et de Dialectologie/Handelingen van de Koninklijke Commissie voor Toponymie en Dialectologie* (Brussels).
BDC	*Bulletin of the Deccan College Research Institute* (Poona).
BDCat	*Bulleti de Dialectologia Catalana*. 1913-1936.
BDE	*Boletín de Dialectología Española*. Abadía de San Cugat del Vallés (Barcelona).
BDHA	*Biblioteca de Dialectología Hispanoamericana*.
BDLC	*Bolleti del diccionari de la llengua catalana*. 1933.
BDR	*Bulletin de Dialectologie romane*. Société de dialectologie romane (Hamburg).
BE	*Bălgarski Ezik* (Sofia).
BECh	*Bibliothèque de l'École des Chartes* (Paris).
Belfagor	*Belfagor* (= *Rassegna di varia umanità*, Florence).
BF	*Boletim de Filologia* (Lisbon).
BFE	*Boletín de Filología Española* (Madrid).
BFM	*Boletín de Filologia* (Montevideo).
BFPhLL	*Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège* (Paris).
BFR	*Boletim de Filologia* (Rio de Janeiro).
BFS	*Bulletin de la Faculté des Lettres de Strasbourg* (Strasbourg).
BFUCh	*Boletín de Filología. Instituto de Filología de la Universidad de Chile* (Santiago, Chile).
BGDSL	*Beiträge zur Geschichte der deutschen Sprache und Literatur* (Halle).
BHi	*Bulletin Hispanique* (= *Annales de la Faculté des Lettres de Bordeaux*, Bordeaux).
BHS	*Bulletin of Hispanic Studies* (Liverpool).

Biblica	*Biblica*. Commentarii editi cura Pontificii Instituti Biblici (Rome).
Biblos	*Biblos*. Universidade Faculdade de Letres (Coimbra).
BICC	See Thesaurus.
BICS	*Bulletin of the Institute of Classical Studies of the University of London* (London).
BIEA	*Boletin del Instituto de Estudios Asturianos* (Oviedo).
BIEg	*Bulletin de l'Institute Égyptien. Ve série* (Cairo).
BijdrTLV	*Bijdragen tot de Taal-, Land- en Volkenkunde*. Uitgegeven door het Koninklijk Instituut voor Taal-, Land- en Volkenkunde (The Hague).
BILAL	*Bulletin d'information du Laboratoire d'analyse Lexicologique* (Besançon).
BiOr	*Bibliotheca Orientalis* (Leiden).
BIS	*Buletin i Institutit të Studimeve* (Tirana).
BIShk	*Buletin i Institutit të Shkencavet* (Tirana).
BJR	*Bulletin des jeunes Romanistes* (Strasbourg).
BK	*Bedi Karthlisa* [Le destin de la Géorgie] (= *Revue de Kartvelologie*, Paris).
BL	*Bibliographie linguistique publiée par le Comité International Permanent des Linguistes/Linguistic Bibliography* (Utrecht and Antwerp).
BLI	*Beiträge zur Linguistik und Informationsverarbeitung* (Munich). (Formerly BSI.)
BLing	*Bulletin linguistique*. Publié par A. Rosetti (Bucharest).
BLux	*Bulletin linguistique et ethnologique*. Institut grand-ducal (Luxembourg).
BMDial	*Bijdragen en Mededelingen der Dialectencommissie van de Koninklijke Nederlandse Akademie van Wetenschappen te Amsterdam* (Amsterdam).
BMFEA	*Bulletin of the Museum of Far Eastern Antiquities* (Östasiatiska Samlingarna) (Stockholm).
BMNaam	*Bijdragen en Mededelingen der Naamkundecommissie van de Koninklijke Nederlandse Akademie van Wetenschappen te Amsterdam* (Amsterdam).
BMP	*Boletín de la Biblioteca de Menéndez Pelayo* (Santander).
BNF	*Beiträge zur Namenforschung* (Heidelberg).
BNFS	*Bidrag til Nordisk Filologi av studerende ved Kristiania Universitet* (Kristiania, Oslo).
Bohemia	*Bohemia*. Jahrbuch des Collegium Carolinum (Munich).
BPhH	*Bulletin Philologique et Historique du Comité des Travaux Historiques et Scientifiques* (Paris).
BPs	*Bulletin de Psychologie* (Paris).
BPTJ	*Biuletyn polskiego towarzystwa jezykoznawczego/Bulletin de la Société polonaise de Linguistique* (Wroclaw and Cracow).
BRAE	*Boletín de la Real Academia Española* (Madrid).
BRAH	*Boletín de la Real Academia de la Historia* (Madrid).
Brain	*Brain* (London).
BrJEPs	*British Journal of Educational Psychology* (London).
BrJPsych	*British Journal of Psychology* (London).
BRPh	*Beiträge zur romanischen Philologie* (Berlin).
BRSVAP	*Boletín de la Real Sociedad Vasongada de Amigos del País* (San Sebastian).
BS	*Behavioral Science*.
BSE	*Brno Studies in English* (Brno).
BShkSh	*Buletin për shkencat shoqërore/Botim i Institutit të Shkencave* (Tirana).
BSI	*Beiträge zur Sprachkunde und Informationsverarbeitung* (Munich and Vienna). (See also BLI.)
BSIFFA	*Bollettino della Società Italiana di fonetica, foniatria e audiologia* (Padua).
BSL	*Bulletin de la Société de Linguistique de Paris* (Paris).
BSOAS	*Bulletin of the School of Oriental and African Studies, University of London* (London).
BT	*The Bible Translator*. Periodical for the Assistance of Bible Translators (London).
BUShT (Ser.ShkSh)	*Buletin i Universitetit Shtetëror të Tiranes. Seria Shkencat Shoqërore* (Tirana). (From 1964: *Studime historike and Studime filologjike*.)
BVSAW	*Berichte über die Verhandlungen der Sächsischen Akademie der Wissenschaften zu Leipzig, Philologisch-historische Klasse* (Berlin).
Byzantion	*Byzantion* (= *Revue Internationale des Études byzantines*, Brussels).

ByzNgrJb	*Byzantinisch-neugreichische jahrbücher*. Internationales wissenschaftliches organ (Berlin-Wilmersdorf).
ByzZ	*Byzantinische Zeitschrift* (Munich).
CAIEF	*Cahiers de l'Association Internationale des Études Françaises* (Paris).
CAJ	*Central Asiatic Journal* (The Hague and Wiesbaden).
CanadJPs	*Canadian Journal of Psychology/Revue Canadienne de Psychologie* (Toronto).
Caucasica	*Caucasica* (= *Zeitschrift für die Erforschung der Sprachen und Kulturen des Kaukasus*, Leipzig).
CBLFT	*Congresso Brasileiro da Língua Falada no Teatro*.
CCM	*Cahiers de civilisation médiévale* (Poitiers).
CdE	*Chronique d'Egypte*. Bulletin Périodique de la Fondation Egyptologique Reine Élisabeth (Brussels).
CDI	*Carta dei Dialetti Italiani* (Bari).
CEAfr	*Cahiers d'Études Africaines* (Paris).
Ce Fastu?	*Ce Fastu?* (= *Rivista della Società Filologica Friulana*, Udine).
CEG	*Cuadernos de Estudios Gallegos* (Santiago de Compostela).
Celi	*Celi*. Rakstu Krajums (Lund).
Celtica	*Celtica* (Dublin).
CFiloz	*Cercetări de Filozofie* (Bucharest).
CFS	*Cahiers Ferdinand de Saussure* (Geneva).
ChDev	*Child Development*. Society for Research in Child Development (Washington, D.C.).
CIELB	*Colóquio Internacional des Estudos Luso-Brasileiros*.
CIFU	*Congressus internationalis Fenno-Ugristarum Budapestini habitus 20-24 IX 1960*. Ed. by Gy. Ortutay. Budapest, Akadémiai Kiádo, 1963.
CILR	*Congres international de linguistique romane*.
CITA	*Congrès international de toponymie et d'anthroponymie*.
CJL	*Canadian Journal of Linguistics/Revue canadienne de Linguistique* (Toronto). (Continuation of JCLA.)
CLex	*Cahiers de Lexicologie* (Besançon).
CLing	*Cercetări de Lingvistică* (Cluj).
CLTA	*Cahiers de linguistique théorique et appliquée* (Bucharest).
C&M	*Classica et Medievalia* (= *Revue danoise de philologie et d'histoire*, Copenhagen).
ČMF	*Časopis pro Moderní Fiolologii* (Prague).
CMRS	*Cahiers du Monde russe et soviétique* (Paris and The Hague).
CompL	*Computational Linguistics*. The Computing Centre of the Hungarian Academy of Sciences (Budapest).
Contact	*Contact*. Bulletin of the International Federation of Modern Language Teachers (Beograd).
Convivium	*Convivium* (= *Revista di lettere, filosofia e storia*, Turin).
Cortex	*Cortex* (Varèse).
CPC	*La Cybernétique et la Pédagogie cybernétique* (Paris).
CPh	*Classical Philology* (Chicago).
CQ	*The Classical Quarterly* (London).
CR	*The Classical Review* (London).
CRAI	*Comptes Rendus de l'Académie des Inscriptions et Belles-Lettres* (Paris).
CSIFU	*Congressus secundus internationalis Fenno-Ugristarum Helsingiae habitus 23-28 VIII 1965, Pars 1, Acta linguistica*. Ed. by Paavo Ravila, Helsinki, Societas Fenno-Ugrica, 1968.
CSP	*Cahiers Sextil Puşcariu* (Seattle).
CTL	*Current Trends in Linguistics* (The Hague). 1963-.
CultNeol	*Cultura Neolatina*. Bolletino dell'Istituto di Filologia Romanza della Università di Roma (Modena).
CUnam	*Cuadernos de la Cátedra Miguel de Unamuno* (Salamanca).
DBI	*Dizionario Biografico degli Italiani* (Rome). 1960-.
DBR	*Les Dialectes Belgo-Romans* (Brussels).
DCEC	*Diccionario Critico Etimologico de la Lengua Castellana* (Madrid and Bern). 1954.

DEEH	*Diccionario Etimologico Espanol e Hispanico* (Madrid). 1954.
De Homine	*De Homine*. Centro di Ricerca per le Scienze Morali e Sociali (Florence).
DEnl	*Dizionario enciclopedico italiano*. 12 vols. (Rome). 1955-61.
DEtl	*Dizionario etimologico italiano*. 5 vols. (Florence). 1950-57.
DF	*Danske Folkemaal* (Copenhagen).
DHLE	*Diccionario Historico de la Lengua Espanola*. 1960-.
Diogène	*Diogène* (= *Revue internationale des sciences humaines*, Paris).
Divus Thomas	*Divus Thomas*. Commentarium de philosophia et theologia.
DJbVK	*Deutsches Jahrbuch für Volkskunde* (Berlin).
DLZ	*Deutsche Literaturzeitung für Kritik der internationalen Wissenschaft* (Berlin).
DmB	*Driemaandelijkse Bladen* (= *Tijdschrift voor taal en volksleven in het Oosten van Nederland*, Groningen).
DNVA	*Det norske videnskapsakademi* (Oslo).
Doklady APN	*Doklady Akademii Pedagogičeskix Nauk RSFSR* (Moscow).
Downside Review	*The Downside Review*. A Quarterly of Catholic Thought (Downside Abbey, Stratton on the Fosse, Bath).
DR	*Dacoromania* (Cluj).
DS	*Danske Studier* (Copenhagen).
DU	*Der Deutschunterricht*. Beiträge zu seiner Praxis und wissenschaftlichen Grundlegung (Stuttgart).
DUJ	*The Durham University Journal* (Durham).
DVLG	*Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte* (Stuttgart).
EA	*Études Anglaises* (Paris).
EC	*Études Celtiques* (Paris)
EClás	*Estudios Clásicos* (Madrid).
ED	*Enciclopedia Dantesca* (Rome).
EETS	*Early English Text Society* (London).
EFon	*Estudios Foneticos* (Madrid).
EFOu	*Études Finno-ougriennes* (Paris).
EGerm	*Études Germaniques* (= *Revue trimestrielle de la Société des Études Germaniques*, Paris).
EI	*Enciclopedia Italiana*. 36 vols. (Rome). 1929-38.
Éigse	*Éigse*. A Journal of Irish Studies (Dublin).
EJ	*Eusko-Jakintza* (Bayonne).
ELA	*Études de linguistique appliquée*. Publications du Centre de linguistique appliquée de la Faculté des Lettres et Sciences humaines de Basançon (Paris).
ELH	*Enciclopedia Lingüistica Hispanica*.
ELT	*English Language Teaching* (London).
Em	*Emérita*. Boletín de lingüística y filología clásica (Madrid).
Epigraphica	*Epigraphica* (= *Rivista Italiana di Epigrafia*, Milan).
ER	*Estudis Romanicos* (Barcelona).
Eranos	*Eranos*. Acta philologica Seucana (Uppsala).
Erasmus	*Erasmus. Speculum scientiarum*. International Bulletin of Contemporary Scholarship/Bulletin international de la science contemporaine (Wiesbaden).
Eriu	*Eriu* (= *The Journal of the School of Irish Learning*, Dublin).
ES	*English Studies*. A Journal of English Letters and Philology (Amsterdam).
EspA	*Español Actual* (Madrid).
EStn	*Englische Studien* (Marburg).
ETAb	*English Teaching Abstracts* (London).
ETC.	*ETC*. A Review of General Semantics (Chicago).
EtL	*Études de Lettres*. Bulletin de la Faculté des Lettres de l'Université de Lausanne (Lausanne).
EUC	*Estudis Universitaris Catalans*.
Euphorion	*Euphorion* (= *Zeitschrift für Literaturgeschichte*, Heidelberg).
Euskera	*Euskera* (Bilbao). 1920-1935, 1956-.

E&W	*East and West*. Quarterly published by the Istituto Italiano per il Medio ed Estremo Oriento (Rome).
FB	*Het Franse Boek* (Amsterdam).
FD	*Fonetica şi Dialectologie* (Bucharest).
FdaM	*Le Français dans le Monde* (Paris).
FdL	*Forum der Letteren* (Leiden).
FEW	*Französisches Etymologisches Wörterbuch*. By W. von Wartburg.
F&F	*Forschungen und Fortschritte* (Berlin).
FFC	*Folklore Fellows Communications* (Helsinki).
FiA	*Fiamuri i Arbërit* (Cosenza).
Fil	*Filología*. Universidad nacional. Facultad de filosofía y letras. Instituto de filología. Sección románica (Buenos Aires).
Finite String	*The Finite String*. Center for Applied Linguistics (Washington, D.C.).
FL	*Foundations of Language* (= *International journal of language and philosophy*, Dordrecht, The Netherlands).
FLing	*Folia Linguistica*. Acta Societatis linguisticae Europaeae (The Hague).
FM	*Le Français Moderne* (= *Revue de linguistique française*, Paris).
FMod	*Filología Moderna* (Madrid).
FMSt	*Folkmålsstudier* (Helsinki).
Förh	*Förhandlingar vid sammankomst för att dryfta fragor rörande svenskans beskrivning*.
Fornvännen	*Fornvännen* (= *Tidskrift för svensk antikvarisk/Journal of Swedish Antiquarian Research*, Stockholm).
Fremdsprachen	*Fremdsprachen* (= *Zeitschrift für Dolmetscher, Übersetzer und Sprachkundige*, Leipzig).
Froðskaparrit	*Froðskaparrit*. Annales Societatis scientiarum Faeroensis (Tórshavn).
FRPh	*Forschungen zur romanischen Philologie* (Münster)
FS	*French Studies* (Oxford).
FT	*Finsk Tidskrift* (Åbo).
FUF	*Finnisch-ugrische Forschungen* (= *Zeitschrift für Finnish-ugrische Sprach- und Volkskunde*, Helsinki).
FVL	*Forschungen zur Volks- und Landeskunde*. Academia republicii populare romine. Sektion fuer gesellschaft-wissenschaften (Sibiu, Transylvania).
Germanistik	*Germanistik* (= *Internationales Referatorgan mit bibliographischen Hinweisen*, Tübingen).
GGA	*Göttingische Gelehrte Anzeigen* (Göttingen).
GH	*Gure Herria* (Ustaritz Basses-Pyrénées).
GHÅ	*Göteborgs Högskolas Årsskrift* (Gothenburg).
GIF	*Giornale Italiano di Filologia* (Naples).
GjAlb	*Gjurmime albanologjike*. E përkoshhme shkencore e Katedrës Albanologjike të Falkultetit Filozofik të Prishtinës/Albanološka istraživanja/Recherches d'albanologie (Pristina).
GL	*General Linguistics* (Lexington, Kentucky).
GLL	*German Life and Letters* (Oxford).
GLECS	*Comptes rendus du Groupe Linguistique d'Études Chamito-Sémitiques* (Paris).
Glotta	*Glotta* (= *Zeitschrift für griechische und lateinische Sprache*, Göttingen).
GNDBiH	*Godišnjak Nančnog društva NR Bosne i Hercegovine*. Balkanološki Institut (Sarajevo).
Gnomon	*Gnomon* (= *Kritische Zeitschrift für die gesamte klassische Altertumwissenschaft*, Munich).
GQ	*German Quarterly* (Lancaster, Pennsylvania).
GR	*The Germanic Review* (New York).
GRM	*Germanisch-Romanische Monatsschrift* (Heidelberg).
GSLI	*Giornale Storico della Letterature Italiana* (Turin).
GUÅ	*Göteborgs Universitets Årsskrift/Acta Universitatis Gotoburgensis* (Gothenburg).
Gymnasium	*Gymnasium*. Vierteljahreszeitschrift für humanistische Bildung (Heidelberg).

HA	*Handes amsoreaj. Hajagitakan ousoumnatherth/Handes Amsorya* (= *Zeitschrift für armenische Philologie*, Vienna).
HBVK	*Hessische Blätter für Volkskunde* (Giessen).
Helikon	*Helikon* (= *Rivista di tradizione e cultura classica*, Naples).
Hermathena	*Hermathena* (= *Dublin University Review*, Dublin).
Hermes	*Hermes* (= *Zeitschrift für klassische Philologie*, Wiesbaden).
Hesperia	*Hesperia* (= *Journal of the American School of Classical Studies at Athens*, Athens).
HFM	*Historisk-filosofiske meddelelser udgivet af det Kongelige Danske Videnskabernes Selskab* (Copenhagen).
HiD	*Hylli i Dritës.*
Historia	*Historia* (= *Zeitschrift für alte Geschichte*, Wiesbaden).
HM	*L'Hygiène mentale* (Paris).
HMP	*Homenaje a Menendez Pidal* (Madrid). 1925.
Homme	*L'Homme* (= *Revue française d'anthropologie*, Paris and The Hague).
HR	*Hispanic Review* (Philadelphia).
HSPh	*Harvard Studies in Classical Philology* (Cambridge, Massachusetts).
Humanitas	*Humanitas* (= *Revista do Instituto de Estudos Clássicos da Faculdade de Letras da Universidade de Coimbra*, Coimbra).
HZnMTL	*Handelingen van de Zuidnederlandse Maatschappij voor Taal- en Letterkunde en Geschiedenis* (St. Agatha-Berchem, Brussels).
IA	*Iranica Antiqua* (Leiden).
IBK	*Innsbrucker Beiträge zur Kulturwissenschaft* (Innsbruck).
IC	*Information and control* (New York and London).
ID	*L'Italia Dialettale* (Pisa).
IDEA	*Instituto de Estudios Asturianos.*
IdgJb	*Indogermanisches Jahrbuch* (Strasbourg).
Idioma	*Idioma* (= *International Modern Language Review*, Munich).
IF	*Indogermanische Forschungen* (= *Zeitschrift für Indogermanistik und allgemeine Sprachwissenschaft*, Berlin).
IIJ	*Indo-Iranian Journal* (The Hague).
IJAL	*International Journal of American Linguistics* (Baltimore).
IJSLP	*International Journal of Slavic Linguistics and Poetics* (The Hague).
ILB	*Inqueritó Linguístico Boleo.*
IncL	*The Incorporated Linguist* (London).
Inquiry	*Inquiry*. An interdisciplinary Journal of Philosophy and the Social Sciences (Oslo).
IRAL	*International Review of Applied Linguistics in Language Teaching/Internationale Zeitschrift für angewandte Linguistik in der Spracherziehung* (Heidelberg).
Iraq	*Iraq*. Published by the British School of Archaeology in Iraq (London).
ISK	*Instituttet for Sammenlignende Kulturforskning/The Institute for Comparative Research in Human Culture Publications. Series B* (Oslo).
Islam	*Der Islam* (= *Zeitschrift für Geschichte und Kultur des Islamischen Orients*, Berlin).
ÍT	*Íslenzk Tunga/Lingua Islandica* (Reykjavik).
It	*Italica*. American Association of Teachers of Italian (Chicago and New York).
It Beaken	*It Beaken*. Meidielingen fan de Fryske Akademy (Assen).
IzvAPN	*Izvestija Akademii Pedagogičeskix Nauk RSFSR* (Moscow).
JA	*Journal Asiatique* (Paris).
JAF	*Journal of American Folklore* (Philadelphia).
JAfrH	*The Journal of African History* (London).
JAfrL	*Journal of African Languages* (London).
JanL	*Janua Linguarum. Series minor, maior, and practica* (The Hague).
JAOS	*Journal of the American Oriental Society* (New Haven, Connecticut).
JbAChr	*Jahrbuch für Antike und Christentum* (Münster).
JbAWG	*Jahrbuch der Akademie der Wissenschaften in Göttingen* (Göttingen).
JbAWL	*Jahrbuch der Akademie der Wissenschaften und der Literatur in Mainz* (Wiesbaden).
JbBAW	*Jahrbuch der Bayerischen Akademie der Wissenschaften* (Munich).
JbDAW	*Jahrbuch der Deutschen Akademie der Wissenschaften zu Berlin* (Berlin).

JbFL	*Jahrbuch für fränkische Landesforschung* (Kallmünz-Opf).
JbHWA	*Jahrbuch der hamburgischen wissenschaftlichen Anstalten* (Hamburg).
JbIRS	*Jahresbericht des Instituts fur rumänische sprache zu Leipzig* (Leipzig).
JbKNA	*Jaarboek der Koninklijke Nederlandse Akademie van Wetenschappen* (Amsterdam).
JbKVAW	*Jaarboek van de Koninklijke Vlaamse Academie voor Wetenschappen, Letteren en Schone Kunsten van België* (Brussels).
JbMNL	*Jaarboek van de Maatschappij der Nederlandse Letterkunde te Leiden* (Leiden).
JbMU	*Jahrbuch, Marburger Universitätsbund* (Marburg).
JbPh	*Jahrbuch für Philologie: Idealistiche Philologie* (Munich).
JbRESL	*Jahrbuch für romanische und englische Sprache und Literatur.*
JbSAW	*Jahrbuch, Sächsische Akademie der Wissenschaften zu Leipzig* (Berlin).
JČ	*Jazykovedný Časopis* (Bratislava).
JCLA	*The Journal of the Canadian Linguistic Association/Revue de l'Association canadienne de linguistique* (Edmonton, Alberta). (See CJL.)
JdS	*Journal des Savants* (Paris).
JdT	*Journal des Traducteurs* (Montreal).
JEA	*The Journal of Egyptian Archaeology* (London).
JEGP	*The Journal of English and Germanic Philology* (Urbana, Illinois).
JEOL	*Jaarbericht van het Vooraziatisch-Egyptisch Genootschap 'Ex Oriente Lux'/Annuaire de la Société orientale 'Ex Oriente Lux'* (Leiden).
JFORL	*Journal Français d'oto-rhino-laryngologie* (Paris).
JGyLS	*Journal of the Gypsy Lore Society* (Edinburgh).
JHS	*The Journal of Hellenic Studies* (London).
JIPhonA	*Journal of the International Phonetics Association* (London). (Formerly MPhon.)
JJewS	*The Journal of Jewish Studies* (London).
JL	*Journal of Linguistics.* Journal of the Linguistics Association of Great Britain. (London).
JMS	*Journal of Maltese Studies* (Valetta, Malta).
JNPsych	*Journal de neurologie et de psychiatrie* (Brussels).
JPs	*Journal de Psychologie* (Paris).
JPsych	*Journal de Psychologie normale et pathologique* (Paris).
JRAI	*Journal of the Royal Anthropological Institute of Great Britain and Ireland* (London).
JRAS	*Journal of the Royal Asiatic Society of Great Britain and Ireland* (London).
JRS	*The Journal of Roman Studies* (London).
JSAfr	*Journal de la Société des Africanistes* (Paris).
JSAm	*Journal de la Société des Américanistes* (Paris).
JSFOu	*Suomalais-ugrilaisen seuran aikakauskirja/Journal de la Société Finno-ougrienne* (Helsinki).
JsIF	*Južnoslovenski Filolog* (Belgrade).
JSOc	*Journal de la Société des Océanistes* (Paris).
JSS	*Journal of Semitic Studies* (Manchester).
JWAfrL	*The Journal of West African Languages* (London).
Kadmos	*Kadmos* (= *Zeitschrift für vor- und frühgriechische Epigraphik*, Berlin).
Kant-Studien	*Kant-Studien.* Philosophische Zeitschrift der Kant-Gesellschaft (Bonn).
KDVS	*Det Kongelige danske Videnskabernes Selskab. Hist.-Filo. Meddelelser* (Copenhagen).
KJbFRPh	*Kritischer Jahresbericht über die Fortschritte der romanischen Philologie* (Munich and Leipzig).
Klio	*Klio.* Beiträge zur alten Geschichte (Berlin).
Kokalos	*Kokalos.* Studi publicati dell'Istituto di storia antica dell'Università di Palermo (Palermo).
Kratylos	*Kratylos.* Kritisches Berichts- und Rezensionsorgan für indogermanische und allgemeine Sprachwissenschaft (Wiesbaden).
KV	*Kalevalaseuran Vuosikirja* (Helsinki).
KVATL	*Kon. Vlaamsche Acad. voor Taal- en Letterkunde. Verslagen en Mededelingen* (Ghent).

Kybernetika	*Kybernetika* (Prague).
KZ	*Zeitschrift für vergleichende Sprachforschung auf dem Gebiete der indogermanischen Sprachen.* Begründet von A. Kuhn (Göttingen).
Langages	*Langages* (Paris).
Language + Automation	*Language + Automation.* Quarterly Bibliography (Washington, D.C.)
Latomus	*Latomus* (= *Revue d'études latines*, Brussels).
LB	*Leuvense Bijdragen* (= *Tijdschrift voor germaanse Filologie*, Louvain).
LBerichte	*Linguistiche Berichte* (Braunschweig).
LbR	*Limba Română* (Bucharest).
LC	*Revue 'Langage et comportement'* (Paris).
LEC	*Les Études Classiques* (Namur).
LES	*Lebende Sprachen* (Berlin-Munich).
LeSt	*Lingua e Stile* (= *Quaderni dell'Istituto di Glottologia dell'Università degli Studi di Bologna*, Bologna).
Lg	*Language* (= *Journal of the Linguistic Society of America*, Baltimore).
LGRPh	*Literaturblatt für germanische und romanische Philologie* (Heilbron).
LHMA	*Leges Hispanicae Medii Aevi.*
LingB	*Linguistique balcanique* (Sofia).
Lingua	*Lingua. International Review of General Linguistics/Revue Internationale de linguistique générale* (Amsterdam).
Linguistics	*Linguistics.* An international review (The Hague).
Linguistique	*La Linguistique* (= *Revue internationale de linguistique générale*, Paris).
LISL	*Letopis Instituta za serbski ludospyt w Budysinje pri Nemskej Akademiji wedomoscow w Berlinje. Rjad A. Rec a literatura/Jahrbuch des Instituts für sorbische Volksforschung in Bautzen bei der Deutschen Akademie der Wissenschaften zu Berlin* (Bautzen).
LIt	*Lettere Italiane* (Florence).
LLBA	*Language and Language Behavior Abstracts* (The Hague).
LLFR	*Lexicologie et lexicographie françaises et romanes, orientations et exigences actuelles. Strasbourg, 12-16 Novembre 1957.* Ed. by Paul Imbs. Paris, éd. du Centre National de la Recherche Scientifique. 1961.
LM	*Les Langues Modernes* (Paris).
LN	*Lingua Nostra* (Florence).
Lochlann	*Lochlann.* A Review of Celtic Studies (Oslo).
Logopedia	*Logopedia.* Zagadnienia kultury zywego słowa (Lublin).
LR	*Les Lettres Romanes* (Louvain).
L&S	*Language and Speech* (Teddington, Middlesex).
LSFU	*Lexica Societatis Fenno-Ugricae* (Helsinki).
LsNS	*Lundastudier i nordisk språkvetenskap* (Lund).
LT	*Levende Talen.* Berichten en mededelingen van de 'Vereniging van Leraren in Levende Talen' (Groningen).
LUÅ	*Lunds Universitets Årsskrift/Acta Universitatis Lundensis* (Lund).
LUI	*Lessico Universale Italiano* (Rome). 1968-.
Lustrum	*Lustrum* (= *Internationale Forschungsberichte aus dem Bereich des Klassischen Altertums*, Göttingen).
MA	*Le Moyen Âge* (= *Revue d'histoire et de philologie*, Brussels).
MAev	*Medium Aevum* (Oxford).
Maia	*Maia* (= *Rivista di letterature classiche*, Bologna).
MALinc	*Atti della Accademia Nazionale dei Lincei, Memorie della Classe di scienze morali, storiche e filologiche* (Rome).
Man	Man. A Record of Anthropological Science (London).
MASO	*Mejerbergs Arkiv för svensk ordfskning* (Gothenburg).
MDAI(K)	*Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* (Wiesbaden).
Mél. ling	*Mélanges linguistiques publiés á l'occasion du VIIIe Congrès Internationale des Linguistes à Oslo, du 5 a 9 août, 1957.* Comité de rédaction: Iorgu Iordan, Émile

	Petrovici, A. Rosetti. Secrétaire: V. Şuteu. Bucharest, éd. de l'Academie de la République Populaire Roumaine. 1957.
Methodos	*Methodos. Linguaggio e cibernetica/Language and Cybernetics* (Milan).
MFÅ	*Modersmålslärarnas Förenings Årsskrift* (Stockholm).
MH	*Museum Helveticum* (= *Schweizerische Zeitschrift für klassische Altertumwissenschaft/Revue suisse pour l'étude de l'antiquité classique*, Basel).
Mind	*Mind.* A quarterly review of psychology and philosophy (London).
Minos	*Minos* (= *Revista de filología egea*, Salamanca).
MIO	*Mitteilungen des Instituts für Orientforschung.* Deutsche Akademie der Wissenschaften zu Berlin (Berlin).
MIÖG	*Mitteilungen des Instituts für Österreichische Geschichtsforschung* (Graz and Cologne).
MKNA	*Mededelingen van de Koninklijke Nederlandsche Akademie van Wetenschappen, afdeling Letterkunde* (Amsterdam).
ML	*Modern Languages* (= *Journal of the Modern Language Association*, London).
MLatJb	*Mittellateinisches Jahrbuch* (Cologne).
MLFA	*Modersmålslärarnas Förenings Årsskrift* (Gothenburg).
MLForum	*Modern Language Forum* (Los Angeles).
MLJ	*Modern Language Journal* (Ann Arbor, Michigan).
MLN	*Modern Language News* (Baltimore).
MLQ	*Modern Language Quarterly* (Seattle).
MLR	*The Modern Language Review* (Cambridge).
MM	*Maal og Minne.* Norske Studier (Oslo).
Mn	*Mnemosyne.* Bibliotheca Classica Batavia (Leiden).
MNCDN	*Mededelingen van de Nijmeegse Centrale voor dialect- en naamkunde* (Assen).
MNy	*Magyar Nyelv* (Budapest).
MPh	*Modern Philology* (Chicago).
MPhon	*Le Maître Phonétique.* Organe de l'Association Phonétique Internationale (London). (Formerly JIPhonA.)
MS	*Mediaeval Studies* (Toronto).
MSFOu	*Mémoires de la Société Finno-ougrienne* (Helsinki).
MSL	*Mémoires de la Société de Linguistique* (Paris).
MSLL	*Monograph Series on Language and Linguistics, Georgetown University* (Washington, D.C.).
MSpr	*Moderne Sprachen* (Vienna).
MSpråk	*Moderna Språk* (Stockholm).
MSS	*Münchener Studien zur Sprachwissenschaft* (Munich).
MT	*Mechanical Translation* (Cambridge, Massachusetts).
Mu	*Muttersprache* (= *Zeitschrift zur Pflege und Erforschung der deutschen Sprache*, Lüneburg).
Muséon	*Le Muséon* (= *Revue d'études orientales*, Louvain).
MVN	*Mededelingen van de Vereniging voor Naamkunde te Leuven en de Commissie voor Naamkunde te Amsterdam* (Louvain).
NALF	*Nouvel Atlas linguistique de la France.*
NAWG	*Nachrichten von der Akademie der Wissenschaften in Göttingen, Philologisch-historische Klasse* (Göttingen).
NDVS-F	*Naučnye doklady Vyssej školy, Filologičeski nauki* (Moscow).
NdW	*Niederdeutsches Wort* (Münster).
Nerthus	*Nerthus.* Nordisch-deutsche Beiträge (Düsseldorf and Cologne).
Nervenartz	*Nervenartz* (Cologne).
Neuropsychologia	*Neuropsychologia* (Oxford).
NJb	*Niederdeutsches Jahrbuch.* Jahrbuch des Vereins für niederdeutsche Sprachforschung (Neumünster).
NJKA	*Neue Jahrbücher für das Klassische Alterum* (Leipzig).
NJWJ	*Neue Jahrbücher für Wissenschaft und Jugendbildung.*
NM	*Niederdeutsche Mitteilungen* (Lund).

NMA	*Norsk Målførearkiv* (Oslo).
NMon	*Neuphilologische Monatsschrift.*
NMWP	*Neusprachliche Mitteilungen aus Wissenschaft und Praxis* (Berlin).
NoB	*Namn och Bygd* (= *Tidskrift för nordisk ortnamnsforskning*, Uppsala).
NoVidSF	*Det Kongelige Norske Videnskabers Selskabs Fordhandlinger* (Trondheim).
Nph	*Neophilologus* (Groningen).
NPhM	*Neuphilologische Mitteilungen.* Bulletin de la Société neophilologique de Helsinki (Helsinki).
NphZ	*Neuphilologische Zeitschrift* (Berlin).
NRFH	*Nueva Revista de Filología Hispánica* (Mexico).
NS	*Die Neueren Sprachen* (Frankfurt am Main).
NSE	*Norwegian Studies in English* (Oslo).
NsvS	*Nysvenska Studier* (= *Tidskrift för svensk stil- och sprakforskning*, Uppsala).
NTg	*De Nieuwe Taalgids* (Groningen).
NTL	*Nordisk tidskrift for vetenskap, konst och industri.* Utgiven ar Letterstedtska föreningen (Stockholm).
NTPs	*Nederlands tijdschrift voor de psychologie en haar grensgebieden* (Amsterdam).
NTS	*Norsk Tidsskrift for Sprogvidenskap* (Oslo).
NTTS	*Nordisk Tidsskrift for Tale og Stemme* (Copenhagen).
NTU	*Nordiska texter och undersökningar* (Uppsala).
N&V	*Nova et Vetera* (= *Tijdschrift voor onderwijs en opvoeding*, Brussels).
NVSS	*Det Kongelige Norske Videnskabers Selskabs Skrifter* (Trondheim).
NWIG	*Nieuwe West-Indische Gids* (The Hague).
NyIroK	*Nyelv- és Irodalomtudománi Közlemények* (Cluj).
NyK	*Nyelvudományi Közlemények.* A Magyar Tudományos Akadémia nyelvtudományi bizottságának megbizásából (Budapest).
OA	*Oriens Antiquus* (= *Rivista del Centro per le antichità e la storia dell'arte del Vicino Oriente*, Rome).
ODS	*Ordbog over det danske sprog.*
ODVS	*Det Kongelige Danske videnskabernes Selskab.* Oversigt over Selskabets Virksomhed (Copenhagen).
OE	*Oriens Extremus* (Wiesbaden).
Ogam	*Ogam.* Tradition celtique (Rennes).
OGand	*Orientalia Gandensia.* Jaarboek van het Hoger Instituut voor Oosterse, Oosteuropese en Afrikaanse taalkunde en geschiednis bij de Rijksuniversiteit te Gent (Leiden).
OLZ	*Orientalistische Literaturzeitung* (Berlin).
Onoma	*Onoma.* Bulletin d'information et de bibliographie/Bibliographical and Information Bulletin (Louvain).
Onomastica	*Onomastica* (Lyon and Paris).
Or	*Orientalia.* Commentarii periodici Pontificii Instituti Biblici (Rome).
Orbis	*Orbis.* Bulletin international de documentation linguistique (Louvain).
OrChr	*Oriens Christianus.* Hefte für die Kunde des christlichen Orients (Wiesbaden).
Oriens	*Oriens* (= *Milletlerarasi Şark Tetkikleri Cemujeti Mecmuasi/Journal of the International Society for Oriental Research*, Leiden).
Orpheus	*Orpheus* (= *Rivista di umanità classica e cristiana*, Catania).
OS	*Orientalia Suecana* (Uppsala).
OSlP	*Oxford Slavonic Papers* (London).
OSUÅ	*Ortnamnssälskapets i Uppsala Årsskrift* (Uppsala).
Paideia	*Paideia* (= *Revista letteraria di informazione bibliografica*, Genoa).
PAPhilosS	*Proceedings of the American Philosophical Society* (Philadelphia).
PAS	*Proceedings of the Aristotelian Society* (London).
PBA	*Proceedings of the British Academy* (London).
PBB(H)	*Beiträge zur Geschichte der deutschen Sprache und Literatur.* Begründet von H. Paul und W. Braune (Halle).
PBB(T)	*Beiträge zur Geschichte der deutschen Sprache und Literatur* (Tübingen).

PEQ	*Palestine Exploration Quarterly* (London).
PEur	*Paedagogica Europaea.*
PFLE	*Presente y Futuro de la Lengua Espanola.*
Phil & Phen	*Philosophy and Phenomenological Research.* International Phenomenological Society, State University of New York at Buffalo (Buffalo, New York).
Philologus	*Philologus* (= *Zeitschrift für das klassische Alterum*, Berlin and Wiesbaden).
Philosophy	*Philosophy* (= *Journal of the Royal Institute of Philosophy*, Macmillan Ltd., Basingbroke, Hampshire).
Phonetica	*Phonetica* (= *Internationale Zeitschrift für Phonetik/International Journal of Phonetics*, Basel and New York).
PhP	*Philologica Pragensia* (Prague).
PhQ	*Philological Quarterly* (Iowa City).
PICL 4	*Actes du quatrième congrès International de Linguistes, tenu à Copenhague du 27 Août au 1er Septembre 1936.* Copenhagen, Einar Munksgaard, 1938.
PICL 7	*Proceedings of the Seventh International Congress of Linguists, London, 1-6 September, 1952.* Published under the auspices of C.I.P.L. (Permanent International Committee of Linguists) with the assistance of UNESCO. General editor: F. Norman. Assistant editor: P. F. Ganz. London, International University Booksellers, 1956.
PICL 8	*Proceedings of the Eighth International Congress of Linguists/Actes du Huitième Congrès International des Linguistes, Oslo 5-9 August, 1960.* General editor: Eva Sivertsen. Oslo, Oslo University Press, 1958.
PICL 9	*Proceedings of the Ninth International Congress of Linguists, Cambridge, Mass., August 27-31, 1962.* Ed. by Horace Lunt. Janua Linguarum series maior 12, The Hague, Mouton & Co., 1964.
PICL 10	*Actes du Xe Congrès International des Linguistes, Bucarest, 28 août-2 Septembre 1967.* Rédacteur en chef, A Graurs. Éditions de l'Académie de la République Socialiste de Roumanie, Bucarest, 4 Vols. 1969-1970.
PICPS 4	*Proceedings of the Fourth International Congress of Phonetic Sciences, held at the University of Helsinki, 4-9 September, 1961.* Edited by Antti Sovijärvi and Pento Aalto. The Hague, Mouton & Co., 1962.
PICPS 5	*Proceedings of the Fifth International Congress of Phonetic Sciences, held at the University of Münster, 16-22 August, 1964.* Ed. by Eberhard Zwirner and Wolfgang Bethge. Basel and New York, S. Karger, 1965.
PICPS 6	*Proceedings of the Sixth International Congress of Phonetic Sciences, held in Prague, September 7-13, 1967.*
Pirineos	*Pirineos* (= *Revista del Instituto de Estudios Pirenaicos*, Zaragoza).
Platon	*Platon.* Deltion tes Hetaireias Hellenon Philologon (Athens).
PLG	*Probleme de lingvistică generală* (Bucharest).
PLPLS	*Proceedings of the Leeds Philosophical and Literary Society, Literary and Historical Section* (Leeds).
PMLA	*Publications of the Modern Language Society of America* (New York).
Poetica	*Poetica* (= *Zeitschrift für Sprach- und Litteraturwissenschaft*, Munich).
PP	*La Parola del Passato: Rivista di Studi Classici* (Napels).
PSE	*Prague Studies in English* (Prague).
PsF	*Psychologie Française* (Paris).
PT	*Pedagogisk tidskrift* (Stockholm).
QCFLP	*Quaderni del Cirdolo filologico e linguistico padovano* (Padua).
QIGB	*Quaderni dell'Istituto di Glottologia della Università di Bologna* (Bologna).
RALinc	*Atti della Accademia Nazionale dei Lincei, Rendiconti della Classe di scienze morali, storiche e filologiche* (Rome).
RAss	*Revue d'Assyriologie et d'Archeologie Orientale* (Paris).
RABM	*Revista de Archivos, Bibliotecas y Museos* (Madrid).
RBPh	*Revue Belge de Philologie et d'Histoire/Belgisch Tijdschrift voor Filologie en Geschiedenis* (Brussels).
RCCM	*Rivista di cultura classica e medioevale* (Rome).

RDialR	*Revue de dialectologie romane*. Société de dialectologie romane (Hamburg).
RDyTP	*Revista de Dialectología y Tradiciones Populares* (Madrid).
RE	*Revue d'Egyptologie*. Publiée par la Société Française d'Egyptologie (Paris).
REA	*Revue des Études Anciennes* (Bordeaux and Paris).
REArm	*Revue des Études Arméniennes* (Paris).
REByz	*Revue des Études Byzantines* (Paris).
REG	*Revue des Études Grecques* (Paris).
REI	*Revue des Études Indoeuropéennes*.
REL	*Revue des Études Latines* (Paris).
RENLO	*Revue de l'École Nationale des Langues Orientales* (Paris).
REIsl	*Revue des Études Islamiques* (Paris).
REJuiv	*Revue des Études Juives* (Paris).
RES	*The Review of English Studies* (London).
RESEE	*Revue des Études Sud-Est Européennes* (Bucharest).
RESl	*Revue des Études Slaves* (Paris).
Rev. Neurol	*Revue Neurologie* (Paris).
RevPhonA	*Revue de Phonétique Appliquée* (Mons).
RevR	*Revue Romane* (Copenhagen).
REW	*Romanisches etymologisches Wörterbuch*. By W. Meyer-Lübke.
RF	*Romanische Forschungen*. Vierteljahrschrift für romanische Sprachen und Literaturen (Frankfurt am Main).
RFE	*Revista de Filología Española* (Madrid).
RFH	*Revista de Filología Hispánica* (Buenos Aires).
RFHC	*Revista de la Faculdad de Humanidades y Ciencias*. Univ. de la Republica (Montevideo).
RFIC	*Rivista di Filologia e d'Istruzione Classica* (Turin).
RFiloz	*Rivista de Filozofie* (Bucharest).
RFL	*Revista da Faculdade de Letras da Universidade de Lisboa* (Lisbon).
RFRG	*Rivista de Filologie Romanică şi Germanică* (Bucharest).
RGand	*Romanica Gandensia* (Ghent).
RH	*Romanica Helvetica* (Bern).
RHA	*Revue Hittite et Asianique* (Paris).
RHi	*Revue hispanique*.
RHiM	*Revista Hispánica Moderna* (New York).
RHLaguna	*Revista de Historia Canaria* (La Laguna).
RHLF	*Revue d'Histoire Littéraire de la France* (Paris).
RhM	*Rheinisches Museum für Philologie* (Frankfurt am Main).
RhVJ	*Rheinische Vierteljahrsblätter*. Mitteilungen des Instituts für geschichtliche Landeskunde der Rheinlande an der Universität Bonn (Bonn).
RI	*Revista Iberoamericana*.
RicLing	*Ricerche linguistiche*. Instituto di glottologia dell'Università di Roma (Rome).
RIÉB	*Revue Internationale des Études Basque/Revista Internacionel de estudiós vascos*. Société des études basques 'Eusko-Ikaz-Kuntza' (Paris).
RIEBalc	*Revue internationale des études balcaniques*.
RIGI	*Rivista indo-grecá-italica di filologia, lingua, antichità* (Naples).
RII	*Revista Ingauna e Intermelia* (Albenga, Liguria, Italy).
RIL	*Rendiconti dell'Istituto Lombardo di Scienze e Lettere, Classe di Lettere e scienze morali e storiche* (Milan).
RILD	*Revista italiana di litteratura dialettale* (Sora).
RIOno	*Revue Internationale d'Onomastique* (Paris).
RJb	*Romanistisches Jahrbuch* (Hamburg).
RL	*Revista Lusitania*.
RLaR	*Revue des Langues Romanes* (Montpellier).
RLaV	*Revue des Langues Vivantes/Tijdschrift voor Levende Talen* (Brussels).
RLFE	*Revista do Laboratório de Fonética Experimental* (Coimbra).
RLI	*La Rassegna della Letteratura Italiana* (Genoa).

RLing	*Revue Roumaine de Linguistique* (Bucharest).
RLLProv	*Revue de Langue et Littérature provençales* (Avignon).
RLR	*Revue de Linguistique Romane* (Lyons and Paris).
Ro	*Romania* (Paris).
Romanoslavica	*Romanoslavica* (Bucharest).
RomN	*Romance Notes* (Chapel Hill, North Carolina).
RomPh	*Romance Philology* (Berkeley and Los Angeles).
RP	*Revista de Portugal. Série A: Língua portuguesa* (Lisbon).
RPF	*Revista Portuguesa de Filologia* (Coimbra).
RPh	*Revue de Philologie, ce Litterature et d'Histoire anciennes* (Paris).
RPs	*Revista de psihologie* (Bucharest).
RR	*The Romanic Review* (New York).
RRSSPs	*Revue roumaine des sciences sociales. Série de psychologie* (Bucharest).
RSC	*Rivista di Studi Classici* (Turin).
RSEt	*Rassegna di Studi Etiopici* (Rome).
RSlav	*Ricerche Slavistiche* (Rome).
RSLig	*Rivista di Studi Liguri* (Bordighera).
RSO	*Rivista degli Studi Orientali* (Rome).
(I)RTP	*Ia Reunión de Toponimia Pirenaica* (See ATopPir.)
RUB	*Revue de l'Université de Bruxelles* (Brussels).
RVF	*Revista Valenciana de Filología.*
Saga-Book	*Saga-Book of the Viking Society for Northern Research* (London).
Saga och Sed	*Saga och Sed* (= *Gustav Adolfs Akademiens årsbok*, Uppsala).
SAlb	*Studia Albanica* (Tirana).
Sananjalka	*Sananjalka.* Suomen Kielen Seuran vuosikirja (Turku).
SAO	*Studia et Acta Orientalia* (Bucharest).
SAOB	*Svenska Akademiens ordbok* (Lund).
SAOL	*Svenska Akademiens ordlista* (Stockholm).
SaS	*Slovo a Slovesnost* (Prague).
SbBAW	*Sitzungsberichte der Bayerischen Akademie der Wissenschaften, Philosophisch-historische Klasse* (Munich).
SbDAW	*Sitzungsberichte der Deutschen Akademie der Wissenschaften zu Berlin, Klasse für Sprachen, Literatur und Kunst* (Berlin).
SbFAW	*Sitzungsberichte der Finnischen Akademie der Wissenschaften/Proceedings of the Finnish Academy of Science and Letters* (Helsinki).
SbKAW	*Sitzungsberichte der kaiserlichen Akademie der Wissenschaften. Philosophisch-historischen Klasse.*
SbÖAW	*Sitzungsberichte der Österreichischen Akademie der Wissenschaften. Philosophisch-historische Klasse* (Vienna).
SbPAW	*Sitzungsberichte der Preussischen Akademie der Wissenschaften* (Berlin).(=SbDAW 1944-.)
SbSAW	*Sitzungsberichte der Sächsischen Akademie der Wissenschaften zu Leipzig. Philosophisch-historische Klasse* (Berlin).
Scandinavica	*Scandinavica.* An International Journal of Scandinavian Studies (London and New York).
SCauc	*Studia Caucasica* (The Hague).
SCelt	*Studia Celtica* (Cardiff).
SCL	*Studii si Cercetări Lingvistice* (Bucharest).
SClas	*Studii Clasice* (Bucharest).
ScoGS	*Scottish Gaelic Studies* (Aberdeen).
ScoS	*Scottish Studies* (Edinburgh).
ScS	*Scandinavian Studies.* Publication of the Society for the Advancement of Scandinavian Study (Menasha, Wisconsin).
ScSl	*Scando-Slavica* (Copenhagen).
SCŞt	*Studii şi Cercetări Ştiinţifice* (Jassy).
SDS	*Sprachatlas der deutschen Schweiz.*

SE	*Studi Etruschi* (Florence).
SEEJ	*Slavic and East European Journal* (Bloomington, Indiana).
Sefarad	*Sefarad* (= *Revista del Instituto Arias Montano de Estudios Hebraicos y Oriente Próximo* (Madrid and Barcelona).
Semiotica	*Journal of the IASS* (Paris-The Hague).
Semitica	*Semitica* (= *Cahiers publiés par l'Institut d'études sémitiques de l'Université de Paris* (Paris).
Sf	*Sprachforum.*
SFenn	*Studia Fennica* (Helsinki).
SFFBU	*Sborník Prací Filosofické Fakulty Brněnské University* (Brno).
SFI	*Studi di Filologia Italiana.* Bollettino dell'Accademia della Crusca (Florence).
SFil	*Studime filologjike.* Universiteti Shtetëror i Tiranës, Instituti i Historisë dhe i Gjuhësisë (Tirana).
SFr	*Studi Francesi* (Turin).
SFSS	*Samlingar utgivna av Svenska fornskriftsällskapet* (Stockholm).
SG	*Studium Generale* (Berlin, Göttingen, and Heidelberg).
SGGand	*Studia Germanica Gandensia* (Ghent).
Shêjzat	*Shêjzat/Le Pleiadi* (Rome).
SHib	*Studia Hibernica* (Dublin).
SI	*Sprachkunde und Informationsverarbeitung.*
SicGym	*Siculorum Gymnasium* (= *Rassegna semestrale della Facoltà di Lettere e Filosofia dell'Universita di Catania* (Catania).
SIFC	*Studi Italiani di Filologia Classica* (Florence).
SIL	*Studies in Linguistics* (Buffalo, New York).
Sinologica	*Sinologica* (= *Zeitschrift für chinesische Kultur und Wissenschaft*, Basel).
SINSU	*Skrifter utgivna av Institutionen för nordiska språk vid Uppsala universitet* (Uppsala).
SIsl	*Studia Islamica* (Paris).
SJA	*Southwestern Journal of Anthropology* (Albuquerque, New Mexico).
SKGAAF	*Skrifter utgivna av Kgl* (= *Gustav Adolfs akademien för folklivsforskning* (Uppsala).
Skírnir	*Skírnir* (Reykjavík).
SkS	*Skola och samhälle* (Stockholm).
SkSb	*Skandinavskij sbornik/Skandinaavia kogumik/Skrifter om Skandinavien* (Tallinn).
SKST	*Suomalaisen Kirjallisuuden Seuran toimituksia* (Helsinki).
SL	*Studia Linguistica* (= *Revue de linguistique générale et comparée*, Lund).
SLAL	*Skrifter utgivna genom Landsmålsarkivet i Lund* (Lund).
SLI	*Studi Linguistici Italiani* (Freiburg, Switzerland).
SlR	*The Slavonic and East European Review* (London).
SMe	*Studi Medievali.* 3rd series (Spoleto).
SMEA	*Studi Micenei ed Egeo-anatolici.* A cura del Centro di Studi Micenei ed Egeo-anatolici, Universita di Roma (I 1966 = Incunabula Graeca II), Rome.
SMIL	*Statistical Methods in Linguistics* (Stockholm).
SMSpr	*Studier i Modern Språkvetenskap/Stockholm Studies in Modern Philology* (Stockholm).
SMSR	*Studi e materiali di storia delle religione* (Bologna).
SMV	*Studi Mediolatini e Volgari* (Pisa and Bologna).
SNF	*Selskab for nordisk filologi* (Copenhagen).
SNMA	*Skrifter fra Norsk malførearkiv* (Oslo).
SNoF	*Studier i nordisk Filologi.* Skrifter utgivna av Svenska Litteratursallskapet i Finland (Helsinki).
SNPh	*Studia Neophilologica.* A Journal of Germanic and Romance Philology (Uppsala).
SNSA	*Skrifter fra Norsk stadnamnarkiv* (Oslo).
SNSS	*Skrifter utgivna av Nämnden för svensk språkvård* (Stockholm).
SO	*Studia Orientalia.* Edidit Societas Orientalis Fennica (Helsinki).
SocSciI	*Social Science Information/Information sur les sciences sociales.* International Social Science Council (Paris).

Sociologus	*Sociologus* (= *Zeitschritt für empirische Soziologie, Sozialpsychologische und Ethnologische Forschung*, Berlin).
SOF	*Südost-Forschungen* (Munich).
SoK	*Sprog og kultur* (Aarhus).
SOM	*Studia Onomastica Monacensia* (= *VI Internationaler Kongress für Namenforschung, München, 24-28 August 1958*).
SovEtn	*Sovetskaja Etnografija* (Moscow-Leningrad).
Sp	*Speculum*. A Journal of Medieval Studies (Cambridge, Massachusetts).
SPh	*Studies in Philology* (Chapel Hill, North Carolina).
SpL	*Spiegel der Letteren* (= *Tijdschrift voor Nederlandse literatuurgeschiedenis en voor literatuurwetenschap*, Antwerp).
Sprache	*Die Sprache* (= *Zeitschrift für Sprachwissenschaft*, Vienna).
Sprachmittler	*Der Sprachmittler*. Bundessprachenamt (Hurth bei Köln).
Sprachspiegel	*Sprachspiegel*. Mitteilungen des Deutschschweizerischen Sprachvereins (Zürich).
Språkvård	*Språkvård* (= *Tidskrift utgiven av Nämnden för svensk språkvård*, Stockholm).
SprB	*Språkliga bidrag*. Meddelanden från Seminarierna för slaviska språk, jämförande språkforskning, finsk-ugriska språk och östasiatiska språk vid Lunds Universitet (Lund).
SprSUF	*Språkvetenskapliga Sällskapets i Uppsala förhandlingar* (Uppsala).
SRAZ	*Studia Romanica et Anglica Zagrebiensia* (Zagreb).
SSL	*Studi e saggi linguistici*. Supplemento alla rivista 'L'Italia dialettale' (Pisa).
SSLF	*Skrifter utgivna av Svenska litteratursällskapet i Finland* (Helsinki).
SSSPh	*Stockholm Studies in Scandinavian Philology* (Stockholm).
SsvOÅ	*Sydsvenska Ortnamnssällskapets Årsskrift* (Lund).
StIs	*Studia Islandica/Íslenzk fræði* (Reykjavík).
StLog	*Studia Logica* (Warsaw).
STL-QPSR	*Speech Transmission Laboratory — Quarterly Progress and Status Report* (Stockholm).
StUB	*Studia Universitatis Babeş-Bolyai. Psychologia-Paedagogia* (Cluj).
STZ	*Sprache im Technischen Zeitalter* (Stuttgart).
SULMA	*Skrifter utgivna genom Landsmals- och folkminnesarkivet i Uppsala* (Uppsala).
Suomi	*Suomi* (= *Kirjoituksia isänmaallisista aiheista. Suomalaisen Kirjallisuuden Seura*, Helsinki).
SuPs	*Schule und Psychologie*.
SuSuomi	*Suomalainen Suomi* (Helsinki).
STZ	*Sprache im Technischen Zeitalter* (Stuttgart).
SUKOL	*Suomen Uusien Kielten Opettajien Liitto* (Helsinki).
SvLm	*Svenska Landsmål och Svenska Folkliv/Archives des traditions populaires suédoises* (Stockholm).
SymbOsl	*Symbolae Osloenses*. Auspiciis Societatis Graeco-Latinae (Oslo).
Symposium	*Symposium*. A Journal devoted to Modern Foreign Languages and Literatures (Syracuse, New York).
Syria	*Syria* (= *Revue d'art oriental et d'archéologie*, Paris).
TA	*La Traduction automatique* (The Hague and Paris).
TA Informations	Formerly TA (The Hague and Paris).
TAPA	*Transactions and Proceedings of the American Philological Association* (Lancaster, Pennsylvania).
TCLC	*Travaux du Circle Linguistique du Copenhagen* (Copenhagen).
TCLP	*Travaux du Circle Linguistique du Prague* (Prague).
TDeaf	*The Teacher of the Deaf* (Exeter, Devon).
TDRL	*Trabajos sobre el domina románico leonés* (Madrid).
Te Reo	*Te Reo* (= *Proceedings of the Linguistic Society of New Zealand*, Aukland, New Zealand).
TeT	*Taal en Tongval* (= *Driemaandelijks Tijdschrift voor de studie van de Nederlandse volks- en streektalen*, Bosvoorde, Belgium).

Teuth	*Teuthonista* (= *Zeitschrift für Dialektforschung und Sprachgeschichte*, Bonn, Leipzig, and Halle).
Theoria	*Theoria*. A Swedish Journal of Philosophy (Lund).
Thesaurus	*Thesaurus*. Bolétin del Instituto Caro y Cueva (Bogatá).
Tietolipas	*Tietolipas. Suomalaisen Kirjallisuuden Seura* (Helsinki).
TIJa	*Trudy Instituta Jazykoznanija* (Moscow).
TIL	*Travaux de l'Institut de Linguistique, Faculté des Lettres de l'Université de Paris* (Paris).
TIPL	*Travaux de l'Institut de phonétique de Lund* (Lund).
TLL	*Travaux de Linguistique et de Littérature*. Publiés par le Centre de Philologie et de Littératures romanes de l'Université de Strasbourg (Strasbourg).
TLP	*Travaux Linguistiques de Prague* (Prague).
TP	*T'oung Pao*. Archives concernant l'histoire, les langues, la géographie et les arts de l'Asie Orientale (Leiden).
TPhS	*Transactions of the Philological Society* (Oxford).
Tribus	*Tribus* (= *Zeitschrift für Ethnologie und ihre Nachbarwissenschaften vom Linden-Museum*, Stuttgart).
TsNTL	*Tijdschrift voor Nederlandse Taal- en Letterkunde*. Uitgegeven vanwege de Maatschappij der Nederlandse Letterkunde te Leiden (Leiden).
TsVUB	*Tijdschrift van de Vrije Universiteit van Brussel* (Antwerp).
TTL	*Tijdschrift voor Toegepaste Linguistiek/Review of Applied Linguistics* (Louvain).
UAJb	*Ural-Altaische Jahrbücher* (Wiesbaden).
UAS	*Indiana University Publications, Uralic and Altaic Series* (Bloomington and The Hague).
UBA	*Universitetet i Bergen, Årbok* (Bergen).
Učenye zapiska LGU	*Učenye zapisk LGU. Serija filosofskix nauk* (Leningrad).
UCPL	*University of California Publications in Linguistics* (Berkeley and Los Angeles).
UE	*The Use of English* (London).
UfFP	*Udvalg for Folkemaals Publikationer* (Copenhagen).
UJDS	*Universitets-Jubileets danske Samfund*. Skrifter (Copenhagen).
ULMA	*Landsmåls- och folkminnesarkivet i Uppsala*.
Ungar. Jb.	*Ungarische Jahrbucher* (Berlin). (Now UAJb).
Universitas	*Universitas* (= *Zeitschrift für Wissenschaft, Kunst und Literatur*, (Stuttgart).
Us Wurk	*Us Wurk*. Meidielingen fan it Frysk Institüt oan de Rijksuniversiteit yn Grims (Groningen).
UUÅ	*Uppsala Universitets Årsskrift/Recueil de Travaux publié par l'Université d'Uppsala* (Uppsala).
UZISI	*Ucenye zapiski Institute slavjanovedenija* (Moscow).
VD	*Via Domitia* (Toulouse).
VIDSL	*Veröffentlichungen des Instituts für deutsche Sprache und Literatur*. Deutsche Akademie der Wissenschaften zu Berlin (Berlin).
Vir	*Virittäjä. Kotikielen seuran aikakauslehti* (Helsinki).
VIRS	*Veröffentlichungen des Instituts für romanische Sprachwissenschaft*. Deutsche Akademie der Wissenschaften zu Berlin (Berlin).
VJa	*Voprosy Jazykoznanija* (Moscow).
VKNA	*Verhandelingen van de Koninklijke Nederlandse Akademie van Wetenschappen, afdeling Letterkunde*. Nieuwe reeks (Amsterdam).
VKR	*Volkstum und Kultur der Romanen* (Hamburg).
VMKVA	*Koninklijke Vlaamse Academie voor Taal- en Letterkunde, Verslagen en Mededelingen* (Ghent).
VMU	*Vestnik Moskovskogo Universiteta. Serija VII: Filologija* (Moscow).
VPs	*Voprosy Psixologii* (Moscow).
VR	*Vox Romanica* (= *Annales Helvetici explorandis linguis Romanicis destinati*, Bern).
VSlJa	*Voprosy slavjanskogo jazykoznanija* (Moscow).
VSS	*Det norske videnskabers selskat*. Skrifter (Kristiania [Oslo]).

WB	*Weimarer Beiträge* (Weimar).
WI	*Die Welt des Islams* (Leiden).
Wissenschaft und Weltbild	*Wissenschaft und Weltbild* (= *Zeitschrift für die Grundfragen der Forschung*, Wien).
WO	*Die Welt des Orients* (Göttingen).
Word	*Word* (= *Journal of the Linguistic Circle of New York*, New York).
WR	*Die wissenschaftliche Redaktion*. Beiträge, Aufsätze, Vorträge aus dem Bibliographischen Institut (Mannheim).
WS	*Wiener Studien* (= *Zeitschrift für klassische Philologie*, Vienna).
WSlav	*Die Welt der Slaven* (= *Vierteljahrsschrift für Slavistik*, Wiesbaden).
WSlJb	*Wiener Slavistisches Jahrbuch* (Vienna).
WT	*Wetenschappelijke Tijdingen* (Ghent).
WuS	*Worter und Sachen* (Heidelberg).
WVM	*Wiener Volkerkundliche Mitteilungen* (Vienna).
WW	*Wirkendes Wort*. Deutsches Sprachschaffen in Lehre und Leben (Düsseldorf).
WZKM	*Wiener Zeitschrift für die Kunde des Morgenlandes* (Vienna).
WZKSO	*Wiener Zeitschrift für die Kunde Süd- und Ostasiens und Archiv für indische Philosophie* (Vienna).
WZUB	*Wissenschaftliche Zeitschrift der Humboldt-Universität*. Gesellschafts- und Sprachwissenschaftliche Reihe (Berlin).
WZUG	*Wissenschaftliche Zeitschrift der Universität Greifswald*. Gesellschafts- und Sprachwissenschaftliche Reihe.
WZUH	*Wissenschaftliche Zeitschrift der Martin Luther-Universität*. Gesellschafts- und Sprachwissenschaftliche Reihe (Halle-Wittenberg).
WZUJ	*Wissenschaftliche Zeitschrift der Universität Jena*. Gesellschafts- und Sprachwissenschaftliche Reihe (Jena).
WZUL	*Wissenschaftliche Zeitschrift der Karl-Marx Universität*. Gesellschafts- und Sprachwissenschaftliche Reihe (Leipzig).
WZUR	*Wissenschaftliche Zeitschrift der Universität Rostock*. Gesellschafts- und Sprachwissenschaftliche Reihe (Rostock).
YCS	*Yale Classical Studies* (New Haven, Connecticut).
YWMLS	*The Year's Work in Modern Language Studies* (London).
ZA	*Zeitschrift für Assyriologie und verwandte Gebiete* (Berlin).
ZAA	*Zeitschrift für Anglistik und Amerikanistik* (Berlin).
ZAPs	*Zeitschrift für angewandte Psychologie*. (See ZPs.)
ZÄS	*Zeitschrift für ägyptische Sprache und Altertumskunde* (Berlin).
ZBalk	*Zeitschrift für Balkanologie* (Wiesbaden).
ZCPh	*Zeitschrift für celtische Philologie und Volksforschung* (Tübingen).
ZD	*Zeilsprache Deutsch*. Goethe-Institut (Munich). (Formerly Deutschunterricht für Auslander).
ZDA	*Zeitschrift für Deutsches Altertum und deutsch Literatur* (Wiesbaden).
ZDL	*Zeitschrift für Dialektologie und Linguistik* (Wiesbaden). (Formerly ZMaF.)
ZDMG	*Zeitschrift der Deutschen Morgenländischen Gesellschaft* (Wiesbaden).
ZDPh	*Zeitschrift für deutsche Philologie* (Berlin).
ZDPV	*Zeitschrift des Deutschen Palästina-Vereins* (Wiesbaden).
ZDS	*Zeitschrift für deutsche Sprache* (Berlin). (Fortführung der Zeitschrift für deutsche Wortforschung).
ZDW	*Zeitschrift für deutsche Wortforschung* (Strasbourg).
ZEthn	*Zeitschrift für Ethnologie*. Organ der Deutschen Gesellschaft für Volkerkunde (Brunswick).
ZfDK	*Zeitschrift für Deutschkunde* (Berlin and Leipzig). (Fortführung der Zeitschrift für den Deutschen Unterricht.)
ZFSL	*Zeitschrift für französisches Sprache und Literatur* (Wiesbaden).
ZGNPs	*Zeitschrift für die gesamte Neurologie und Psychiatrie* (Berlin).
ZMaF	*Zeitschrift für Mundartforschung* (Wiesbaden). (See also ZDL.)

Z. Neurol. Psychiat.	*Zeitschrift für Neurologischen Psychiatrie* (Leipzig).
ZNU	*Zeitschrift für den Neusprachliches Unterricht* (Berlin).
ZOf	*Zeitschrift für Ostforschung*. Länder und Völker im östlichen Mitteleuropa (Marburg [Lahn]).
ZPhon	*Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* (Berlin).
ZPs	*Zeitschrift für Psychologie* (Leipzig). (Incorporating ZAPs.)
ZRG(GA)	*Zeitschrift der Savigny-Stiftung für Rechtsgeschichte Germanistische Abteilung* (Weimar).
ZRPh	*Zeitschrift für romanische Philologie* (Tübingen).
ZRU	*Zeitschrift für den Russisch-Unterricht* (Göttingen).
ŽVND	*Žurnal vyssšei nervoi deja tel'nosti*. Im. I. P. Pavlova (Moscow).
ZSI	*Zeitschrift für Slawistik* (Berlin).
ZSlPh	*Zeitschrift für Slavische Philologie*.
ZVS	*Zeitschrift für vergleichende Sprachforschung* (Göttingen).

OTHER ABBREVIATIONS

ABLA	Association Belge de Linguistique Appliquée (Louvain). (See also BVTL.)
ACL	Association for Computational Linguistics (Washington, D.C.).
ADNV	Allgemeiner Deutscher Neuphilogen-Verband (Berlin).
AFLA	Association Française de Linguistique Appliquée (Paris).
AIEL	International Association for Latin Epigraphy (Paris).
AIIC	International Association of Conference Interpreters (Geneva).
AILA	Association Internationale de Linguistique Appliquée (Danderyd, Sweden).
AIMAV	Association Internationale pour le Recherche et Diffusion des Méthodes Audio-visuelles et Structuro-globales (Brussels).
ANILS	Associazione Nazionale Insegnanti Lingue Straniere (Rome).
ANLA	Association Norvégienne de Linguistique Appliquée (Trondheim).
APLV	Association des Professeurs de Langues Vivantes de l'Enseignement Public (Paris).
APLV/VLLTB	Association des Professeurs de Langues Vivantes (Brussels).
ASLA	Association Suédoise de Linguistique Appliquée/Svenska Föreningen för Tillämpad Språkvetenskap (Lund).
ATALA	Association pour le Développement de la Traduction Automatique et de la Linguistique Appliquée (Paris).
ATEPO	National Federation of Associations for the Education of Pupils from Overseas. (Formerly Association for the Teaching of English to Pupils from Overseas.) (Nuneation, UK).
AVLA	Audio-Visual Language Association (Langley/Bucks).
BAAL	British Association for Applied Linguistics (Reading).
BDÜ	Bundesverband der Dolemtscher und Übersetzer (Germersheim).
BELC	Bureau pour l'Enseignement de la Langue et de la Civilisation Françaises à l'Étranger (Paris).
BERSHA	Bureau d'Études et de Recherches ou Sciences Humaines Appliquées (Paris).
BVTL	Belgische Vereniging voor Toegepaste Linguïstiek (Louvain). (See also ABLA.)
CAL	Center for Applied Linguistics (Washington, D.C.).
CBL	Cercle Belge de Linguistique/Belgische Kring voor Linguistiek (Brussels).
CECMAS	Centre d'Études des Communications de Masse (Paris).
CELGA	Centro do Ensino de Linguística General e Aplicada (Coimbra).
CETIS	Centre de Traitement de l'Information Scientifique.
CILA	(a) Commission Interuniversitaire Suisse de Linguistique Appliquée (Neuchâtel). (b) Centro Italiano de Linguistica Applicata (Rome).
CILT	Centre for Information on Language Teaching (London).
CIPL	Permanent International Committee of Linguists (Nijmegen).

CNR	Consiglio Nazionale delle Ricerche (Rome).
CNRS	Centre Nationale de la Recherche Scientifique (Paris).
COLING	International Conference on Computational Linguistics (Stockholm).
CRDML	Committee on Research and Development in Modern Languages (London).
CREDIF	Centre de Recherches et d'Études pour la Diffusion du Française (Paris).
CRLLB	Center for Research on Language and Language Behavior (Ann Arbor, Michigan).
CSFLS	Centro di Studi Filologici e Linguistici Siciliani.
CSIC	Consejo Superior de Investigaciones Cientificos (Madrid).
DFG	Deutsche Forschungsgemeinschaft (Bad Godesberg).
DSA	Deutscher Sprachatlas (Marburg).
ETIC	English-Teaching Information Centre (London).
EUROCENTRE	Foundation for European Language and Educational Centres (Zürich).
FILLM	International Federation for Modern Languages and Literatures (Cambridge, UK).
FIPLV	International Federation of Modern Language Teachers (Beograd).
FIT	International Federation of Translators (Paris).
GAL	Gesellschaft für Angewandte Linguistik (Stuttgart).
IAI	International African Institute (London).
IALP	International Association of Logopedics and Phoniatrics (Barcelona).
IASS	International Association for Semiotic Studies (Paris).
IATEFL	International Association of Teachers of English as a Foreign Language (Hounslow/Middx.).
ICOS	International Committee of Onomastic Sciences (Louvain).
IdS	Institut für deutsche Sprache (Mannheim).
IDV	Internationaler Deutschlehrerverband (Hellerup, Denmark).
IFS	Informationszentrum für Fremdsprachenforschung (Marburg).
IPA	International Phonetic Association (London).
IRA	International Reading Association (Newark, Delaware).
MLA	Modern Language Association (London).
NATE	National Association for the Teaching of English.
NCTE	National Council of Teachers of English.
OFINES	Oficina Internacional de Información y Observación del Español (Madrid).
PIAC	Permanent International Altaistic Conference (Bloomington, Indiana).
PUF	Presses Universitaires de la France (Paris).
SDL	Studiengemeinschaft deutscher Linguisten (Bonn).
SIL	Summer Institute of Linguistics. (Branches in the UK and Germany).
SLE	Societas Linguistica Europaea (Kiel).
SLI	Società di Linguistica Italiana (Rome).
UIO	International Union of Orientalists (Munich).
VLLTB	Vereniging van Leraren in Levende Talen (Brussels). (See also APLV/VLLTB.)
ZWO	Zuiver Wetenschappelijk Onderzoek (The Hague).

PART ONE

FIELDS OF LINGUISTICS

THEORY AND PHILOSOPHY OF LANGUAGE

PETER HARTMANN and SIEGFRIED J. SCHMIDT[1]

INTRODUCTION: GENERAL OBSERVATIONS

Much as the nineteenth century bequeathed a multiplicity of anticipatory trends to the entirely different orientation of the twentieth, so the years between 1918 and 1945 form an important stage in the methodical development of the philosophy and theory of language. During these years, trends were established which would lead, in the presence of a corresponding working hypothesis, to the conquest of a new plane in linguistic methodology. It will be most appropriate to represent the interwar period as a whole picture identified by its chief characteristics — possible after the passage of a certain interval — because historical hindsight allows even the causes, origins, and catalysts of intellectual movements to be recognized.

Linguistic philosophy had been and remained active, generally, above all in the domain of German philosophy. In rough geographic terms the pursuit was most advanced in central Europe. The reason was the continuing status in Germany of philosophy as an unquestionably legitimate branch of knowledge. Therefore, when philosophers turned to language as their object, the necessary disciplines were most favorably prepared. Of course, this primacy did not last, as the following portrayal will show, yet the preponderance of linguistic thinking next came to be located even more in the Germanic area — in west central Europe.

For linguistic science in west and central Europe, in contrast, there followed the notable development, not to say surprise, that, in the course of a few decades, the original center of work in linguistic science, namely Germany, withdrew almost entirely out of the discussion which had extended since about 1900 into the international plane. Generally, the expansion of linguistic science had very soon restricted itself to a mere ring of schools or centers which surrounded German territory: the Prague School, the Geneva School, Copenhagen, London. These localized movements were clearly directed toward general linguistics; German linguists consistently and persistently pursued the kinds of conclusion offered by the older historical approach.

[1] The central importance of a portrait of linguistic philosophy makes it necessary to invite a specialist as collaborator: Dr. Siegfried Schmidt, lecturer in philosophy at the University of Karlsruhe. His is the opening section 'Linguistic Philosophy in Western Europe' and the corresponding portion of the bibliography.

In practice, the division of labor was obvious, and there was indeed no lack of German questioning as to exactly why this should be. The truth is that the situation in the first half of our century was that of a centrifugal diffusion, whereby the younger, more abstract, and theoretical school of thought was becoming the more influential.

The old middle European center remained in the position which it had attained and consolidated approximately between 1850 and 1900; that of comparative linguistics. It occupied itself with historical linguistics, language change, linguistic typology, and philological perspectives in a compatible total outlook which can only be understood as a product of its own premises. One might better say, as a basic conception of scientific task and intention, which must be seen as hardly justified by today's advanced standards of theory. If one wants to examine more closely intellectual preconditions, one ventures into the broad and — from the stand-point of intellectual history — important philosophical systems that have conditioned their time; they consequently conditioned also scientific endeavor.

At this point, further specification would constitute digression, but a necessary introduction to the understanding of linguistic philosophy will be provided in Section 1, where a beginning will be made toward a philosophically oriented pre-history of the older historical-comparative linguistics. In fact in these decades of the last century it was still true of linguistics what is true of the earlier stages of thought in any specific discipline: the *Zeitgeist* or broad basis of community thought that can indeed have notable influence even on scientific tendencies and expectations acted as an important place of origin for specific thought structures in individual disciplines. In other words, circumstances did not yet exist to which man is today accustomed — the relative emancipation of specialized occupations from their previous interdependence. Such autonomous arts and sciences can in turn have THEIR influence on the temper of the times, thus reversing the former direction of the process. Even this situation lends itself to very broad characterization: in individual cases, the infant linguistic science very soon and very emphatically assumed the role of stimulus to the world outside its home territory.

One can say that the dominant conception of Science was a temporary derivative of a philosophical position which was established upon assumptions like 'Man is a historical being', 'The world exists in history', and similar generalities. This position is still current in large areas of the West German University curriculum. It is essentially unopposed by philosophical faculties; to study their science is to understand and master historical grounds or traditions. One must recognize and take into account this still valid background in order to comprehend how deep was the incipient change outside German linguistics, beginning about 1900, and how explosive a role modern linguistics can play (not only in West Germany) when it is recognized as the vehicle for antihistorical (theoretical-rational) tendencies. Again it must be said that this retrospective characterization is meant to represent a general situation with tendencies and consequences for which there is, in case it is desired, abundant evidence.

We may return to the special theme and omit any further evaluations, although it

is also valid to consider the contemporary assessment of scientific history in light of both previous and present perspectives. The advantage becomes particularly clear in an assessment of a discipline explicitly devoted to basic research. Since the Second World War, it has become possible to regard linguistics in the only way that seems necessary or correct to the *Zeitgeist* of today: not as historically contingent phenomena but as simply the rational response to those phenomena.

The following presentation is in two parts: 1) linguistic philosophy in Western Europe and 2) linguistic theory in Western Europe. Instructive developments and positions are documented in the bibliography — the factual complexity, especially of the first part, can only be suggested in the text. The second part describes the newer research centers and the situation in the old German territory. It can, of course, be determined and demonstrated that the participation of history in the discoveries is consistent. That is to say, even in the most recent conclusions, points of contact with other positions become apparent either immediately in the approach or relatively soon in the practice. The resulting interrelationships contribute to an always complex and differentiated picture.

The following presentation of philosophy and theory makes a parallel distinction between philosopher and theoretician. This is legitimate insofar as the two directions have not in fact resolved their different premises and grown into a united and cooperative movement. The necessity for cooperation has already been stressed upon occasion (Wein 1963; Schmidt 1967a, b). A precondition for cooperation would be agreement on general principles of inquiry which could provide a broadly differentiated base for useful partnership. Simple specialization in questions of formulation, increasing efficiency in established practices of general research or even a purely idealizing or abstracting elevation of factual yields would hardly suffice. Looked at in this way, the achievement of a synthesizing and autonomous theoretical dimension is still in the future of the linguistic discipline, and one must limit himself in this presentation to characterization of the various thought complexes.

Because of the still missing unified perspectives, it is also sufficient to make the proposed distinctions by means of very loose definitions. We understand under 'linguistic-philosophical' statements simply all those about language by authors who qualify as philosophers, regardless of the realization that *ad hoc* observations naturally occur within the framework of otherwise oriented systems, and regardless of the question of whether or not a distinctly linguistic direction as such can be distinguished, or, from the standpoint of philosophy, whether or not linguistics itself can be justified. In contrast to this, we understand under 'linguistic-theoretical' statements, those which are made with the intention of contributing to the understanding of language as behavior, with the eventual purpose of achieving a level of knowledge that would allow the multiple features of this universal phenomenon to be brought together in an inclusive and usable form for the genus 'language'.

It is obvious that, after a classification of authors into philosophers and theoreticians, it will not be possible to make a corresponding classification of their respective

ideas that is clear and unambiguous. Indeed, one sees theoretical passages in philosophical treatises, and passages in theoretical tracts that more accurately belong to philosophy. To trace such complexities and to note individual occurrences of such interpenetrating levels would be an extremely wearying assignment, which is more reasonably that of methodological history. The resulting kaleidoscopic mosaic would so clutter the basic structure with details as to prevent a coherently informative picture. We will therefore conform to the proposed working distinction because it allows a certain orderliness in the interest of a comprehensive survey.

SECTION ONE: LINGUISTIC PHILOSOPHY IN WESTERN EUROPE

1. LINGUISTIC PHILOSOPHY TO THE END OF THE FIRST WORLD WAR

'Linguistic philosophy' in the sense of the occupation of philosophy with problems of language has been in evidence since the beginning of European philosophy. 'The drama "Philosophy and Language" is as old as philosophy itself' (Wein 1965:161). The starting point of linguistic philosophy as such is, however, as recent as the beginning of this century. Since that time the discipline has become continuously more distinct.

From the beginning of Greek philosophy, thinkers representing changing systems were cognizant of language and tried to bring it, if not into the center, at least into the general limits of their arguments. From the time of Heraclitus' first *logos*-speculations through the sophists' discussion about the mimetic or conventional character of language (*phýsei-thései* debate), continuing in Plato's discovery of the dialectical structure of language (in the sense of a sensuous representation of ideal conceptions), and up to Aristotle's first attempts to explicate the relationship between grammatical and categorical forms, a tradition of philosophical concern with language revealed itself. It revealed itself in the framework of epistemology, ontology, metaphysics, and logic. Its theses and arguments are even now the stuff of historically oriented philosophizing.

Above all there is an almost unchanged tradition of philosophical inquiries into the problem of semantics. Addressing the question of which model can best be applied to the connection between the sign vehicle (*Zeichenbasis*) and the means of purposefully conveying its informative relevance (sense, meaning, concept), a broad tradition of explanations (whether idealistic, empirical, rational, or nominalistic) grew up: namely the controversy over language and concept that had been the subject of varying metaphysical critiques since the sophists. At the beginning of modern philosophy, Locke and Leibnitz attempted to combine a critique of language and the formulation of an ideal language for all purposes of exact scientific and philosophical investigation. With these efforts, they bequeathed to following generations the utopia of a versatile,

logically pure language in the sense of an exact mathematical symbolism as universal notation for all rational insights and their dissemination.

J. G. Hamann, J. G. Herder, and W. von Humboldt were the first to formulate the themes which are even today determining factors in philosophical reflection about the function and accomplishment of language. The themes characterize philosophical activities of men from Cassirer to Wittgenstein, activities which qualify to be predicated as 'linguistic philosophy'. In this sense, linguistic philosophy concentrates on the theme of the CONSTITUTION OF MIND as evidenced by language. This problem can in turn be divided into subordinate themes: 'language as system', 'language and thought/language and knowledge', 'language and reality', 'language and society'. The aim is to promote linguistic philosophy as a form of modern theory of knowledge.

While the great systematic idealists (Kant, Fichte, Schelling, Hegel) have treated language as periphery or ignored it altogether (cf. E. Heintel 1960), there has since Hamann emerged beside this dominant *Zeitströmung* a philosophy (Herder, F. and A. Schlegel, W. von Humboldt, O. F. Gruppe) which functions as a critical complement to or systematic criticism of (still viable) conceptually speculative metaphysics. Language as 'organon' and 'criterion' of reason, language as 'mother of reason and revelation' are Hamann's expressions for the thesis that the human capacities for language and for reasonableness are inseparably related. Language as the realization of the possibility of human reason and reflection, and as form for reflective faculties, language as categorical means to expressing the outlook of a people, language as energy and/or 'inner form' — these are the most important themes of W. von Humboldt, who has inspired first of all German and American neo-Humboldtians such as B. L. Whorf, L. Weisgerber, and their schools. With Humboldt's exemplary work the practice of including the state of linguistics — as confirmation or refutation — in philosophical argumentation was begun. It was a practice that has since rendered it nearly impossible to discover an exact border between philosophy of language and linguistics, that is, between the scientific and philosophical theorems of any given author.

In the late nineteenth century attempts were begun to harmonize Humboldt's constitution theory of language with various traditional systems (of philosophy and natural science) above all those of Kant and Hegel (cf. S. J. Schmidt 1968a:1). Ernst Cassirer's grand attempt (1923), conceived under the influence of all the linguistic advances of his time, to develop a neo-Kantian linguistics of Humboldtian character has remained the most conclusive testimony of this trend. Russell, Whitehead, Frege, Wundt, Husserl, and Marty document through their works the effort to effect admission into linguistics of the most immediate concerns of their time: logic, psychology, and phenomenology.

The question of what is 'philosophical' about linguistic philosophy has been answered (implicitly or explicitly) since Hamann, Herder, and Humboldt in somewhat the following manner: a philosophical perspective on language is primarily the view of its role as constitutive framework of rational knowledge and thinking; in short, as

the surface configuration or vehicle for knowledge. This aspect of the character of language (as a structure of signs or a guide to actions) was propelled into the foreground, and language, as relationship between subject and object, was pushed into the background. History relates that epochs of intensive occupation with linguistics coïncide with those where questions of principle and method in philosophy and/or scientific disciplines are concerned (cf. J. Stenzel 1934:4). Always when the issue of the origin, boundaries, and certainty of human knowledge becomes acute, attention turns to the dimension in which knowledge is formulated and conveyed — that is, intersubjectively documented. If one wants to conceptualize the relation between dimensions which is immediately associated with European philosophy, it would take this form: intensification of philosophical preoccupation with linguistics, critical metaphysics and transcendental inquiry seem to be directly related (cf. S. J. Schmidt 1968a:1). In other words: 'That the basic questions of philosophy cannot be solved until there is agreement about the nature of language may belong among the few universally accepted presuppositions of contemporary philosophical discussion' (Wieland 1962:7).

The astounding impetus to linguistic-philosophical considerations at the beginning of the century (cf. G. Küng 1963:1), which must be seen as closely connected with primary discussions in logic, mathematics (Frege, Hilbert, Brouwer), and physics (Einstein, Planck, Bohr, Heisenberg) speaks for the systematic plausibility of the thesis that linguistic philosophy must be regarded as the relevant form of a critical theory of knowledge (cf. Wein 1960). J. Stenzel has recognized (1934:4) very clearly that a definition of linguistic philosophy is complicated by the 'confusion of language with the essentials of philosophy as such'. The opinion is still current that there exists an aporetic state of affairs with regard to defining the boundaries of the area of 'linguistic philosophy' (Wein 1961:3; cf. also 1963:1).

A systematic determination of the research area for a linguistic philosophy is hardly possible since it would entail the findings of the most varied fields from linguistics to biology. Not by accident has linguistic philosophy realized itself as a critical reflection on knowledge and method in areas where language appears as a theory-producing component and as requiring definition of function. For these reasons it is hardly to be expected that an observation of the course of West European linguistic philosophy will be consistent; the best that can be hoped is the pursuit of a few central themes and a tentatively categorizing sketch of the heterogeneous fullness of linguistic philosophy from the most diverse sides.

2. LINGUISTIC PHILOSOPHY BETWEEN THE TWO WORLD WARS

At the end of the First World War, linguistic philosophy was offering itself as foundation for further examination, supported by Humboldt's knowledge-theory oriented linguistics and E. Husserl's *Logische Untersuchungen.* Linguistic philosophy was involved in an attempt to develop a semantic dimension with a priori laws of reference

autonomous from the system of signs. Informed by physiological linguistics (R. von Raumer, E. von Brücke, R. Kleinpaul, E. Sievers, et al.) and linguistic psychology (H. Steinthal, W. Wundt, A. Marty, J. van Ginneken, E. Fröschels, G. Runze, et al.), the position developed (above all in Germany, since France was dominated by the followers of Durkheim, Lévy-Bruhl, de Saussure, A. Meillet, and their sociological emphasis) into an idealistic, philosophically ambitious combination (cf. Arens 1955). On the one side, language structure, semantics, and syntax were pursued (J. Ries, W. Porzig, J. Weisgerber, J. Trier) or language was understood aesthetically as artistic creation (B. Croce, K. Vossler). On the other side, an attempt was made to conceive of language as constituting the principle of philosophy, as constituting the principle of a conscious view of the world (language as 'spiritual intermediary' in the works of Weisgerber, Porzig, Trier, F.N. Finck, G. Schmidt-Rohr, J. Stenzel).

At the same time, professional philosophers began to formulate the logical and social relevance of the knowledge-theory function and faculty of language. In so doing, they were able to refer back to previous studies of the most varied nature. These were already available or could be further elaborated; they included theories corresponding to Platonism (E. Husserl), Aristotelianism (in the sense of Brentano's psychology, A. Marty), skepticism (F. Mauthner), or existential-phenomenological constructs (M. Heidegger).

England after the Second World War could already claim the authority of a traditional linguistic criticism of metaphysics reaching back to Locke. With G.E. Moore's essay "The refutation of idealism" (1903) and with *Principia Ethica* from the same year, critical objections to Hegelian neo-idealism began with calls for 'common sense' and 'ordinary language' as their methodological justification. A similar and contemporaneous rejection of all metaphysics and adoption of logical linguistic analysis had been promoted since the early years of the century by B. Russell (1918, 1924b). He prepared the groundwork for logical positivism in England and also for the neopositivism of the Vienna Circle in Austria and Germany.

3. PHILOSOPHY OF LANGUAGE AS EPISTEMOLOGICAL CONSTITUTION THEORY

If one surveys the linguistic-philosophical works of non-positivist persuasion up to the Second World War with a view to distinguishing origins and themes, something like the following picture presents itself: to the temper of mind current since W.D. Whitney, W. Scherer, and H. Steinthal, linguistics is not science but intellectual or historical culture. This view has recourse to Humboldt's theory of language as *ergon* and *energeia*, especially to his conception of the 'inner linguistic form' seen as the principle of growth and structure for the hierarchy of meaning (general perspective) in language. This view encouraged an idealistic linguistics with (purposeful) resemblances to philosophical reflections. From all this are derived the following, closely related central themes of this period:

a) Interpretation of language as a whole; interpretation of the nature of language as symbolic form

b) Fresh interpretation of the inner form: language as expressing the *Weltanschauung* of a language community

c) Semantic and syntactic study

d) Interpretation of one's native language as objectified society

e) Interpretation of the relationship of language and thought.

Arising from these studies or inspired by them, intensive interest in language occupied philosophy after World War One. This interest can be characterized as follows:

The revival of Herder's criticism of Kant for neglecting to derive his whole system from language attracted philosophers of the most varied disciplines and persuasions. It caused them to give systematic attention to the entire field of linguistic problems and to restate them as philosophic problems. The resulting linguistic philosophy of this time is a reorientation of all familiar schools and divisions: theory of knowledge, ontology, phenomenology, transcendental logic; pure, philosophical, general, and a priori theories of grammar; philosophical semantics and semasiology; linguistic sociology, aesthetics, and metaphysics (cf. F. Kainz 1936).

What nevertheless permits the grouping of non-positivistic language philosophers active during this time is that given all differences of approach, the themes and conclusions are mostly comparable and/or similar. Common to this group is the preliminary grasp of language as system, structure, or organism (see the exemplary presentation of F. de Saussure). On this basis, the following aspects were emphasized:

a) Speech as a system of acts or functions

b) An individually psychological interpretation of the speech faculty

c) Sociological interpretation of the connection between a language and its linguistic community, in the manner of the reinterpretation begun by G. Ipsen and H. Naumann (bibliographies of this theme are those of Kainz 1937 and K. Hermann 1936).

d) The constitution of linguistic content or sense (also misleadingly termed the 'constitution of reality')

e) Language as a generator of spiritual culture

f) Language as objective being.

This thematic orientation was methodologically grounded in epistemology by Kainz (1936): linguistic philosophy in the narrow sense Kainz designated as a linguistically critical theory (linguistic logic and linguistic critique = theory and critique of knowledge), and asked as its relevant questions: 'How are thinking and speaking related?' — 'Can reason be independent of language, how is "pure" knowledge related to its linguistic embodiment, how does language contribute to certainty ...?' (1936:397).

E. Heintel's amplification of Kainz demonstrates how little the latter's delineation of themes has changed. Heintel claims for linguistic philosophy the status of a separate discipline concerned with the 'interpretation of all of philosophy with reference to language' (1959a:467). The central theme of this discipline according to Heintel is

to be the *logos* problem, considered as the constitutional problem of meaningful objectivity. Ontology, transcendentalism, and existential analysis meet still today within the context of an interpretation of language as reflection.

Now that general introductory remarks have been dispensed with, it is appropriate to trace the development of the constitution theory of linguistics through the arguments of representative writers. E. Cassirer's major work which was based on Kant and Humboldt, *Philosophie der symbolischen Formen* (First Part, 'Die Sprache' 1923) takes off from the premise 'that general theory of knowledge in its traditional formulation and limitations is not adequate for a methodical inquiry into the workings of the mind'. What is needed is a 'general theory of spiritual expressive forms' (seen as symbolic forms) which would permit 'sorting out of the "different categories of understanding" of the world' (Foreword, p. v). Cassirer therefore returns to Dilthey's attempt at a hermeneutic foundation for the humanities in the form of his theoretical constitutional idealism. To observe and portray language as independent spiritual form, that is, as its 'pure philosophical *Gestalt*' and 'from the standpoint of a specific philosophical "system"' is an effort that Cassirer rightly regards a 'challenge not accepted since the first tentative works of Wilhelm von Humboldt' (p. vi). Cassirer knowingly separates this task from the trend of the late nineteenth century which favored the achievement of a philosophical framework through positivistic psychology (Wundt, Steinthal, Marty).

Cooperation between empirical and philosophical linguistics is understood by Cassirer to be the mutual realization that linguistic questions must be formulated as the systematic generalities of philosophy. Answers to these questions, in contrast, will appear only as the products of empirical investigation (p. vii). This idea can still be considered the classical statement of the relation of the two approaches to language.

Employing comprehensive materials on African, North American, and Oceanic languages, Cassirer seeks to demonstrate that a likeness-theory of knowledge is untenable and must be supplanted by a constitution theory. No increment of knowledge exists in itself as simple recognition of external reality; rather, each act of knowledge is generated by 'primitive creative' energy. From this conviction Cassirer draws the conclusion that the premises of expressed science, religion, and art are 'self-generated intellectual symbols' (p. 5) which, through their intervention, make objectivity at all intelligible and demonstrable as meaningful experience. 'For the task of language is not finally to *repeat* similarities and dissimilarities already evident but rather to create them in the first place and make them comprehensible' (p. 43).

On the basis of a Kantian transcendentalism (conditioned in part by Hegel), Cassirer explains that each accomplished quantum of knowledge is an act of objectification made possible by sense-realizing intervention of language. Knowing is: setting up in consciousness that something is something, in the sense that it becomes a factor in a system of relations explicable only through language. Subject and objective being do not face each other as ontologically absolute antitheses; rather, they first gain

identity in the process of acquisition of knowledge. They are restricted by the means and criteria of this process (p. 23f.).

Cassirer does not thus arrive at a naively idealistic theory of the linguistic *construction* of reality (in the same sense that Fichte does); instead he proposes a constitution theory in which language has the means to offer us 'progress from the world of mere feelings to the visible and imaginable world' (p. 20). Language must be seen as sense- or form-giving activity, which transforms elements of sensuous impression into precise and objective (because potentially intersubjective) content of our consciousness.

Cassirer contributes his formulation of the Kantian question of the possibility of knowledge in the words of linguistic philosophy. What Kant had claimed to be the 'schematicism' or the connection between observation and concept is for Cassirer language as sense-constituting intervention between observation and logical interpretative systems (p. 26).

Thinking for Cassirer is thinking in language, which must be taken in such a way that it becomes apparent how, in language, 'an entirely distinct structure not only *of* the world but also *to* the world attains to objective sense relations and objective total view' (p. 11).

Kant's critique of pure reason becomes for Cassirer the 'critique of culture'. Language as symbolic transaction does not construct THE world (as *factum brutum*); it permits through its sense-constitutive structure the compiling of a socially significant, socially recurrent, and binding meaning-complex (culture). Cassirer rightly stresses: '... the content of the cultural conception cannot be separated from primary directions of spiritual productivity: "being" is here not to be grasped except in "doing"' (p. 11).

On the prepared ground of Humboldt's linguistic philosophy (which he renewed as early as 1922) stands another investigator, J. Stenzel, who was influenced by the work of K. Vossler, E. Sievers, A. Riehl, E. Husserl, R. Hönigswald, and, above all, E. Cassirer.

With "Sinn, Bedeutung, Begriff, Definition: Ein Beitrag zur Frage der Sprachmelodie" in 1925, Stenzel tried in the framework of a psycho-physical linguistic interpretation to strengthen the theory of meaning as a 'necessary border territory between logic, psychology, and linguistics'. Like Cassirer, he grasps the primary accomplishment of language as the giving of meaning, whereby he tries — oriented as he is in the theory of psycho-physical parallelism — to suspend the Kantian distinction between inner and outer sense through psychological amplification (p. 15). Language shall 'prove to be the most important example of suspension of distinction between inside and outside, body and mind, sense and its expression' (p. 16).

Stenzel characterizes the function of a word as 'meaning', the function of the sentence as 'sense'. The sense of a sentence, conceived as a whole, must in some way be pre-existent before it appears as individual words in the sentence (p. 18). Only out of this initial whole sense can interpretation of the meaning of individual words be successful. The 'I' as physic experiencer creates between specifier and specified,

between whole sense and partial meanings an 'immediate unity', a 'present-tense' through articulation and language (p. 12). Sense for Stenzel is consequently conceived in the sentence as a psychophysical image, as a unity of articulating and articulated psychophysical components (p. 25). In physical-spiritual expressions, the 'I' realizes the unity of itself and the intended circumstances of its knowing attentiveness.

'Language as arrangement of the circumstantial world and of the mind that reflects and comprehends it' — to portray this is Stenzel's undertaking in his *Philosophie der Sprache* (1934). Here also he begins with the experience of the speaking 'I'. The complex sense-experience of the 'I' is articulated through words in syntax.

With the greatest reliance on Humboldt's (Kantian) model, Stenzel maintains that the articulation of sense in language is a process of reflection in which the mind confronts its objectivated self. 'The source of the continuous effect of language on thought is the spirit's ability to constitute itself, its opportunity to witness its objectivated self' (p. 36). Simultaneous to this realization, however, is the 'spiritual saturation' of circumstantial reality — 'its being is conceived according to the linguistic mode of being, it becomes language of another kind ...' (p. 36).

The mind first becomes aware of its own activity when it confronts its circumstantial (substantial) self in the same way as the phenomena of its articulation. In and through language as recurring property of a linguistic community, the 'I' can for the first time communicate as a member of society.

Humboldt's theory of the world-perspective of language necessarily reappears in Stenzel's model: 'language always portrays appearances to us in a peculiar light, and we may position ourselves wherever we wish, we cannot realize appearances for ourselves or others except in a way suggested by this light' (p. 108). Language, as the only phenomenon that encompasses the material and the spiritual, 'can, after all is said, properly be designated the great Mother of everything spiritual' (p. 110).

Cassirer's and Stenzel's linguistic philosophy marks the ground on which neo-Humboldtians even today meet to discuss the influence of language on the world view of a linguistic community. They also employ in their discussion anthropological, psychological, and biological evidence.

The influence of L. Weisgerber and his school on West European linguistic philosophy remains very notable. From an understanding of linguistic philosophy akin to Herder's, Weisgerber attained a method of looking at language in which the border between scientific and philosophical arguments is indistinct. The difficulty is already evidenced in his central themes: mother tongue and formation of the mind; mother tongue and world view (an extensive bibliography can be found in the *Festschrift*, 1959).

Weisgerber builds on Herder's assumption that language is a form of thinking. In the context of the linguistic community, this form is controlled and elaborated. Thinking and speaking are inseparable; the achievements, truths, and falsehoods of a people are preserved in their language. Weisgerber's basic conception allows itself to be concentrated as the Humboldtian thesis that the spiritual domain and linguistic

Gestalt of a people are directly dependent upon each other. Language is the outer appearance of the spirit of a people; yes, the two can even be considered identical.

Thoughts of this kind had already occurred to F. N. Finck (1899, 1905), to Wundt in his *Völkerpsychologie* (1900), to K. Vossler (1904, 1923, 1925), and especially to G. Schmidt-Rohr (1932). Weisgerber now explicated the constructive role of language in the knowledge-gathering process, applying linguistic and above all psychological phenomena (K. Goldstein 1932; K. Goldstein and A. Gelb 1925) in a much more effective and verifiable way. His presentations emphasize the 'inner form of language' which as *enérgeia* forms an image of the world. Language as intersubjective spiritual *enérgeia* and *logos*-agent interposes between the world of things and the speaker a 'linguistic middle-ground' ('sprachliche Zwischenwelt') which links the two. The middle world of language demonstrates and witnesses the spiritual transformation of the world in the domain of spirit.

From his first major work of linguistic philosophy (*Muttersprache und Geistesbildung*, 1929) to his major work after the Second World War (*Vom Weltbild der deutschen Sprache*, 1953–54a), Weisgerber's idealistic theory of knowledge remains relatively unchanged: language is interpreted as TRANSCENDENTAL SUBJECT, as the instance constituting sense. Using the example of word classes (principally indications of color and relationships), Weisgerber stresses that 'basically, the sound system of the mother tongue is related to the middle world of that tongue. In other words, linguistic denotations are neither unqualified facts of the external world nor imaginative images from another source. Rather, they correspond primarily to a native temper of mind. They seem so inextricably bound to this temper that one is obliged to see them as two aspects of one whole' (1953–54a:13, vol. 2).

J. Trier has developed his field theory on this basis. In his version word classes are interpreted as systematically ordered excerpts from the linguistic-spiritual division of the circumstantial world. W. Porzig, G. Ipsen, and A. Jolles have taken up and amplified these idealistic positions.

An extreme idealism schooled by Croce is advanced by K. Vossler, who attempts to convince us that 'the mind' is 'the only effective cause of the totality of linguistic forms' (1925). According to Vossler's criteria, every thought is realized in linguistic expression; language is the mirror, medium or sign of thought. However, thought must continually free itself from the cocoon of language in order to fulfill itself. The true nature of language is found only in the aesthetic domain because the true nature of language is poetic.

On the foundations of Cassirer, Stenzel, and Weisgerber are based most individual articulations of idealistic linguistic philosophy up to World War Two.

With these positions, P. Matthes attempted in 1926 to join the premises of the *philosophia perennis* in the question of categorical and conceptual systems.

Returning to Hegel, M. Diez proposed (in his posthumously released work, *Sprechen Denken und Erkennen*, 1934) a philosophically directed epistemology which comes to the following conclusions: 'Thinking is that form of imaginative activity which

completes itself in and by language. ... thought comes to consciousness as (interior or exterior) speech' (p. 11). '... thinking is a free process of the constitution of identities in givens through language' (p. 13).

Around these authors who referred back to the classical German idealism and to Humboldt are grouped a number of philosophers who are spokesmen for trends of the late nineteenth and early twentieth centuries, but who have never had influence like the idealistic group.

H. Güntert (1925) proposes a sense-oriented philosophy of language as the opposite pole to positivism. H. Ammann attempts a phenomenological 'concentration on the nature of language' that has as its impetus speech and its 'life forms' (1925–28). Linguistic philosophy is understood by Ammann as a 'critique of linguistics'; the products of such philosophy must be assessed for values relevant to methodical study of language. R. Hönigswald (1937) develops a monadic logic of the relationship of language and circumstance that is closest to the neo-critical attitude of A. Riehl. H. Hatzfeld writes a 'critical' (in the Mauthner sense) introduction to linguistic philosophy (1921).

A somehow exceptional position is adopted by one member of the above group: H. Lipps (1929, 1938). Lipps begins with logic and anthropology, and he attempts, with his hermeneutic logic, to develop an argument of existential (Heidegger) character. He does so in opposition to all logistical and all sign or symbol theories of language.

In the realization that is speech, in conversation — not in linguistic logic, but in what words mean — this is where Lipps finds the real foundation of speech and of linguistic philosophy.

Concerning the relations between language, thought, and reality, Lipps adheres consistently to constitution theory. 'Language orders insofar as its articulations divide the context of reality. The concepts presented by language are not practical but visionary' ([2]1959:92). — 'My language is a binding basis for my understanding of things ... to speak a language is to deal with its latent relationships to things' (pp. 80, 82). The word is the only means to intimacy with things. To understand meanings is not to grasp something ideal, because 'one does not understand "meanings" but rather one retrospectively understands words in the context of what they mean. In the correspondence of word and context, so-called "meaning" makes its very first appearance' (p. 89).

The progress to concept must be accomplished as an illumination of comprehension; this progress is misrepresented when one juxtaposes circumstance and concept in the sense that concept is adjusted to fit circumstance (p. 63). According to Lipps, the concept of givens is but a mirror of a typical way of conceiving givens.

With this conception of linguistic philosophy, which attempts to begin with the subject and his linguistic activity of knowledge-acquisition, Lipps stands on the threshold of an anthropologically oriented linguistics. Such a system begins not with a metaphysical or logical subject-object separation but rather with an understanding of subject and object as aspects of man's linguistically articulated knowledge

gathering process. The final result of this approach is visible in the writings of Wittgenstein.

From linguistic events and his introspective experience on the one hand and from Husserl's pure semantics and theory of intentional acts on the other hand emerges the method of A. Reichling (*Het woord*, 1935).

Linguistic events are regarded by Reichling not as an abstract sign level but as a factual talking-about-something. In his disagreement with K. Bühler, Reichling emphasizes that language is primarily experienced in the WORD (p. 36). In contrast to Bühler, he credits language with the primary function of representation, because language can neglect every function but one — that of naming.

Linguistic usages are interpreted by Reichling as realized sign-experience, as the action of thinking. The sign is an intentionally conceived unity which is the consequence of a spiritually unifying act. This unity is not completely explained by association; rather, it presupposes an inscrutable and unity-lending act.

In opposition to the tendency of linguistics since K. Brugmann (1925) to offer the sentence as primary linguistic unity, Reichling promotes the individual word as the privileged integer. The word is an autonomous unity explicable as one action substituting for another or as unity-lending action contingent on specified experiential occasions.

The identity (of meaning) of the same word in different contexts cannot be explained by a referent which is a constant. It must instead be explained as a meaning portrayed as unified thought which is actualized in that usage. Therefore, the meaning of a word for Reichling is not an imaginative complex (as it is to Ogden and Richards, 1923); it is a unity of thought which is realized in speech, signaling a definite, intended relationship between speaker and matter. The word *Gestalt* itself already presupposes the meaning; only when I know what a word stands for can I recognize it as a 'word' and use it. This nature of meaning is the same for all words.

In reaction to situational stimuli, linguistic usage perfects itself as an active, contingent thinking; as the structural unit of sentences, the word is the element that mediates reality. In terms of Reichling's premises, speaking is active thinking.

The lively interest in linguistic philosophy during this time documents itself not only in these most important works but in an abundance of actualizing portraits of philosophers of the past. Among many that could be named are J. Stenzel (1922, on Humboldt), E. Hoffmann (1925, on language and archaic logic), O. Funke (1927, eighteenth century in England), E. Fiesel (1927, romantic philosophy), K.J. Abramczyk (1928, on Plato), W. Eisen (1929, on Mauthner), L. Landgrebe (1934, on Marty), K. Büchner (1936, on Plato), F. Manthey (1937, on Thomas Aquinas), E. Benz (1936, on J. Böhme).

The explicitly psychological orientation of linguistic philosophy before the First World War does continue after 1918 (for the state of research before 1918, cf. O. Dittrich 1913). A number of psychological-philosophical works appear which either strive to constitute a psychological reformulation of (linguistic) philosophy itself or

purport to be theoretical and empirical contributions to both philosophy and science. (Exhaustive references are found in Kainz 1941–54). Before and after Bühler and Kainz, who have certainly produced the most significant contributions to linguistic psychology from the perspective of intellectual history, there are a great many authors who can be only briefly alluded to here.

A solution of the origin of language through reliance on an anthropology of key situations for societal activities is sought by K. Vossler (1923b, following the lead of A. Noiré, 1877), O. Jespersen (1924), and H. Ammann (1929a). A theory associated with Plato's conception of the natural efficacy of names is put forward in the language physiognomy of H. Werner (1932) and E. Fenz (1940). N. Ach (1921, 1932) works on the psychological bases of linguistic communication and questions of conceptualization. Often cited works on pathological linguistics in Gelb and Goldstein 1932 (Goldstein 1925) served as confirmation for the field- and world-theories of language.

The greater part of psychological research was carried out in French-speaking territory (F. de Saussure 1916, J. Vendryes 1921a, J. Piaget 1923, Ch. Bally 1926, and the Saussurian H. Delacroix 1924, and E. Buyssens 1928) and also in Scandinavia: A. Noreen (1923) and O. Jespersen (1924).

A theory of signs standing between psychologistic and epistemological extremes is that of K. Bühler (1933, 1934). Psychologically, a conception of language is for him to be subordinated to the perspective of language as activity and as expression. For Bühler, it is the representative function that distinguishes language from sign techniques in the non-human sphere. He begins with the speech act (*parole*) and specifies the achievement of language as conveyance of *Kundgabe*, *Appell* and *Darstellung* (cf. the now famous scheme in 1933a:90). (A similar tripartite discrimination was already in evidence with Husserl and Porzig.)

As seen by Bühler the (complex) linguistic sign possesses three semantic functions: it is a symbol on the strength of its contingency to circumstances and their content; it is a symptom thanks to its dependence on the speaker whose introspection it expresses, and it is a signal to the hearer whose inner and outer attitude it guides.

This organic model of language is founded on the theory of the representative nature of all linguistic phenomena. Specialization of the meaning of linguistic utterances (qua application of signs) is accomplished by situation and context (sign-field and symbol-field).

Important for linguistic philosophy is Bühler's theory of the 'abstractive relevance' of all linguistic signs (cf. in this connection the recent reinterpretation by B. Liebrucks 1964). To this relevance Bühler, in agreement with Gomperz and the scholastic formulation *aliquid stat pro aliquo*, attributes representative function to the linguistic sign. A sign is abstractively relevant because it can serve simultaneously the various functions of portrayal, expression, and *Appell*.

An aspect that has so far been accorded less attention is Bühler's attempted relation of the speech act to the concepts of action (in any case as historical or biographical, not as the synchronic or structural concept like that found in the sociology of T.

Parsons). Bühler distinguishes as perimeters for the concept of action the actor, the field of action, and the needs and opportunity of the actor. In opposition to Husserl's subjectivistic act-theses, he accents the strong social moment of language.

A comprehensively encyclopedic survey of the findings of linguistic psychology to the start of the Second World War has been set down by F. Kainz in his major *Psychologie der Sprache* (1941–54). The spectrum of problems discussed reaches from the foundation of linguistic psychology to its scientific method, from the question of the origin, nature, and achievement of language over individual inquiries into child and primitive language, and animal communication, to linguistic pathology and physiology.

With regard to the central philosophical question of the connection between language and thought, Kainz adheres from the beginning (until 1964) to the position that despite the intimate 'action- and cooperation relations' between language and thought, a systematic and significant separation between these 'productively correlative functions' must be assumed. Thoughts in the process of formation definitely experience three important aids through language: '(1) a clarifying division (differentiation, explication) of the as yet vague sense-directive and therefore a more precise scheme of what is meant (intended); (2) a fixing and objectification of the thought conception which results in the abstract thought content losing its elusiveness through attachment to symbols and presenting itself in more conformable and characteristic form; (3) an increase in exactness, system and completeness of the task of thinking and the representation of its products' (1964:570).

The process-aspect of language does of course not permit a clear structural and sequential separation of speech and thought; linguistic articulation/formation involves itself inextricably in thinking 'which cannot then stand separately beside or before [speech]' (*ibid.*). Every instance of man's understanding his environment in terms of the (also linguistically constituted) 'elementary classes of unmistakeable biological significance' is dependent upon language and linguistic operations. Speaking and thinking are highly correlated processes.

Sociological linguistics is found — to be sure only in its infancy — in all of Western Europe.

In France, investigators include L. Lévy-Bruhl (1922), L. Jordan (1929) and Ch. Bally (1927). In Germany there are sociological studies by L. Weisgerber (1934), K. Vossler (1923b), and W. Benjamin (1935).

A sociolinguistics in the narrower sense, however, can first be ascribed to A. Sommerfelt (1938) and T. T. Segerstedt (1947), M. M. Lewis (1947), and after the war, to the French linguist M. Cohen (1956).

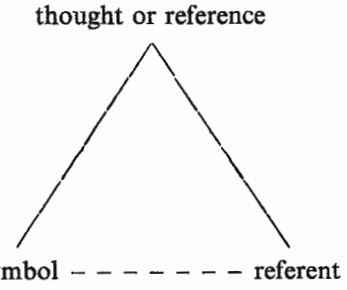
Limited to a few essays is the ethical perspective (in which there was a lively interest in the nineteenth century: K. E. A. Schmidt 1859, J. Bahnsen 1881, G. Runze 1889a-b, W. Wundt 1886) and the aesthetic perspective (Kainz 1924, 1934). These approaches are relegated to the background behind knowledge-theory and psychological interests of the time.

4. LINGUISTIC PHILOSOPHY AS NEO-POSITIVISTIC SYMBOLISM

An alternative to the method of constitution theory of idealistic alignment is offered in Western Europe primarily by English linguistic philosophy. A major manifestation is the book which appeared in the same year as Cassirer's life work: *The meaning of meaning* by Ogden and Richards (1923).

Moore had grounded his preference for 'common sense' and 'ordinary language' on a critical practice of philosophical analysis; he wished to conceive of the whole of philosophy as an analysis of linguistic arguments, and tried to determine the possibility of verifiable argumentation as such. His goal lay more in the direction of linguistically critical metaphysics (and was embraced by the late Wittgenstein, cf. S.J. Schmidt 1968a:4). Again, Russell's definition of the business of philosophy as logical analysis leads to a purely positivistic rejection of all non-scientific utterances by Carnap and the Vienna circle. In contrast to all these, Ogden and Richards remain in the traditional area of Continental inquiry. This is already clear in their subtitle: *A study of the influence of language upon thought and the science of symbolism.* The authors are in truth close to the positivistic persuasion, but more in the sense of a PSYCHOLOGICAL than a LOGICAL positivism. Their study inspired new schools with its radical sign theory of language which is reminiscent of Ch. S. Peirce's 'semeiotic' and sharply contradicts de Saussure's understanding of signs (in reference to the following, cf. Wein 1963, 1965).

In de Saussure's scheme, the sign represented two psychic entities: the signifier and the signified. Ogden and Richards distinguish between thoughts, words, and things and arrange them in a now famous scheme:



In subsequent Anglo-American literature, the revised concepts 'reference' and 'referent' have become standard. 'Reference' here cloaks in a neutral, nothing but relation-suggesting manner the symbolic application, the symbolic accomplishment, which would otherwise be misleadingly labeled 'thinking' or 'thought'. The position to which the reference has reference is called, with equal neutrality, the 'referent'. As in the case of 'reference', no prejudice is urged concerning its ontological status.

In thinking, interest centers primarily on what is thought about; thinking, however, according to Ogden and Richards, is carried out in the sphere of influence of linguistic symbols. That is to say, all thinking is a form of sign interpretation in the

sense of an intention exercised upon a referent. Interpretation of a sign is identified by the authors with the inclination of the speaker to a referent.

Knowledge is therefore taken to be a causal relationship which is subject to methodical examination by an inductive psychology of thinking. This is based on Pavlov's explication of the conditioned reflex. One recognizes a sign because/when one has learned how its successful (= referent-relating) application occurs in specific situations. This implies that our experience of signs in the past determines our most recent interpretation of symbols. The relationship between symbol and referent is scientifically inexplicable; it is interpreted by mediation of the reference-action.

Implicit here is nothing more than a psychological restatement of what de Saussure had called the arbitrariness of linguistic signs. Of course, de Saussure distinguished sharply between symbol and sign, attributing to the symbol a natural connection to what it symbolizes, while adhering strictly to 'sign' when speaking of language. For Ogden and Richards this distinction plays no role; sign and symbol are used interchangeably.

Besides this psychological model for meaning (which is reminiscent of Aristotle, cf. S. J. Schmidt 1968a:2), the authors introduce the subsequently influential distinction between cognitive meaning (referential use of a symbol) and felt meaning (emotive meaning) whereby emotive meaning includes both subjective and social factors of the sign user's stance to the sign situation and to the other sign users.

A sign/symbol is true, then, when it represents an adequate circumstantial relation in a sentence or utterance. Symbol, reference and referent are bound together in the context of the sign situation. Such a theory of knowledge is however reduced to a psychological theory of signs which has as its basis for reference and judgment empirical experience and authority. With this conception, Ogden and Richards place themselves wholly in the English empirical tradition of Locke and Hume.

Prophetic aspects of their work lie in the reduction of the knowledge process to processes of sign usage (Wittgenstein) and the interpretation of such processes (Ch. Morris). A second anticipation is their dissemination of critical thought about language (linguistic analysis and critique of the structure of linguistic arguments as a means of clarifying confused linguistic philosophy). Their critique is, however, not conceived in the manner of Mauthner's or Russell's; it aims rather at a single interpretation of the representation of circumstance [*Gegenstandsbeziehung*] through analysis of the sign situation.

Understood in this way, the science of symbols becomes an elementary inquiry which subordinates even the natural sciences under its critical pursuit of meaning (while Russell and Carnap wish to subordinate all science and philosophy under the critique of mathematics and physics).

In historical perspective, Ogden and Richards appear as pathfinders for the field of neopositivistic philosophy dealt with by Wittgenstein in his *Tractatus Logico-Philosophicus* (finished 1918, published 1921).

Wittgenstein qualifies as the only significant linguistic philosopher who neglects (in

his argument) to take account of the state of linguistic research in his time. His subjects are problems treated by his teacher Russell: sentence, variables, identity, generalization, etc. In the *Tractatus* he is concerned above all with the relationship of language and reality, language and thought, language and science, language and logic — in short, all the classic themes of the philosophy of language.

Wittgenstein himself formulated in his Foreword the tendency and theme of his book: 'The book treats the philosophical problems and shows ... that the formulation of these problems derives from a misunderstanding of the logic of our language. One could sum up the total sense of the book in something like these words: what can be said at all can be said clearly; what cannot be expressed must be left unsaid. ... The border [of thought, S.J.S.] can be discerned only in the context of language, and all that lies on the other side of the border is simply nonsense.'

Wittgenstein's early work must be singled out as one of the most effective provocations of philosophy in this century. In a radical, apodictic, and aporetic way, philosophy in the traditional sense is here dismantled and reduced to the category of scientific sentences from which all non-verifiable strings are ejected as linguistic guides to false paths — in other words, as not transparent to the light of true linguistic logic and phrase structure. Nonetheless the *Tractatus* itself contains a proposal for an ontology and theory of knowledge. Stegmüller (1965) is not unjustified when he describes Wittgenstein as an ontologist, transcendental philosopher, and constructivist.

Secondary literature on Wittgenstein has expanded until it is unsurveyable, so remarks here must be held to a minimum.

Typical of Wittgenstein's ontology is the dominance of the concept of structure. The world is not made up of things or atoms but of data (*Tatsachen*), that is, of the existence of facts. The efficacy of procedures is already prejudiced by the concept of 'things'. Fact and procedure have a logical structure. Wittgenstein calls the possibility of structure 'form'. The logical image of a datum is a thought. The image is an ordered collaboration of elements; such collaboration is its structure. The image and the imagined must have the logical form in common; only insofar as this is true can the image be a representation or projection (model) of reality. With the help of sensibly confirmable signs, thoughts are expressed in sentences. The totality of sentences constitutes language. If one substitutes 'image' (*Bild*) for 'thought', the sentence as expression of thought becomes an image of reality ('image' in the sense of mathematical similarity).

How much Wittgenstein with his representational theory is captive to English empiricism, with its ontologically and transcendentally interpreted subject-object scheme, and how distant he is, on the other hand, from Cassirer's constitution of sense [*Sinn*] through language, is shown by the observation in 2.223: 'In order to know whether the image is a true or a false one, we must compare it with reality.'

Wittgenstein's theory of language is singularly name-oriented: the name as simple sign (or undefinable archetypal sign [*Urzeichen*], 3.26) represents a circumstance in a

sentence. It must be noted that for Wittgenstein a name only has meaning in the context of the sentence (3.3). Unlike Ogden and Richards, Wittgenstein distinguishes clearly between sign and symbol. A sign is sensibly confirmable; it becomes symbol or expression [*Ausdruck*] only as a part of the sentence which characterizes that sense (3.31). When a word represents in more than one way, as often happens in colloquial speech, Wittgenstein would maintain not that it simply has multiple meanings but that it belongs to various symbols. 'In order to recognize the symbol in the sign, one must be attentive to meaningful application.' Only in application does a sign become meaningful (3.326, anticipates the *Philosophical investigations*).

Out of the intermixture of sign and symbol and out of the fact that language 'clothes' thought, Wittgenstein conceives a realization of the great possibilities of confusion bred by unenlightened language usage. In his opinion, most if not all traditional problems of philosophy are products of such unexamined and unanalyzed usage, and could be solved and banished by an analysis later labeled 'therapeutic'.

Most philosophical statements are therefore not falsehoods (correctable) but rather largely nonsensical results of a misunderstanding of linguistic logic. Given this premise, all philosophy is or should be linguistic critique qua logical linguistic analysis, not linguistic critique qua adversely critical and skeptical linguistics in Mauthner's sense. If language affords a structurally logical isomorphic image of reality, then the aporetics of language and linguistic philosophy consists in the qualification that what is common to the image and its model cannot be talked about because this is presupposed by every discussion. The sentence therefore can portray reality, but not its logical form, which is the very characteristic that language must have in common with reality in order to portray it. The logical form of reality can only be SHOWN by the sentence. It cannot be EXPRESSED.

A philosophy of language Wittgenstein concludes to be impossible: logical analysis of language eliminates the possibility of a philosophy in the sense of a system of meaningful statements (that is, of synthetic sentences). True statements are afforded only by the natural sciences. Philosophy, however, is not one of the natural sciences; it stands 'over or under, but not beside, the natural sciences' (4.111). This does not mean that it is a superior or inferior discipline; rather it means that philosophy is not a study but something quite different: an ACTIVITY (*Tätigkeit*, 4.112). 'A philosophical work is comprised fundamentally of commentary. ... The goal of philosophy is logical elucidation of thought ... The accomplishment of philosophy is not "philosophical sentences" but the clarification of sentences' (4.112). In this sense philosophy — though rejected as a doctrine — can justifiably be regarded as a critical analytical activity that borders on the disputed fringes of the natural sciences and defines the thinkable. In defining the thinkable it can suggest or signify the unthinkable (4.115). The unthinkable, the mystical, can only be SUGGESTED. The philosophical attempt to conceive the limits of the world outlines the border of the mystical realm. Like every natural science, philosophy can only SAY what is able to be said with clarity, that is, with ability to be verified. But philosophy can SHOW the mystic. The limits of

utterance are the limits of language. They SIGNIFY [*bedeuten*] the limits of every speaker's world.

Wittgenstein's aporetic linguistic philosophy realizes itself in a twofold way:

a) as logical-therapeutic critique of language whose assignment is to correct, through logical analysis of language and through identification of general sentence-form and its relevance to what is represented, the philosophical and scientific notions of the structure of utterances. That is, the assignment of the critique is to reclaim these notions from the metaphysical realm. From the perspective of traditional philosophical systems, this critique is an attempted deletion of all philosophy;

b) as a constructive linguistic philosophy which specifies possibilities of meaningful [*sinnvoll*] utterances and locates their boundaries.

Wittgenstein's validation of the discipline of linguistic philosophy distinguishes it in a characteristic way from theories of the so-called 'Vienna circle' — theories which he had strongly influenced himself during his Vienna years (cf. V. Kraft 1950). M. Schlick, R. Carnap, O. Neurath, and others developed there a theory of knowledge distinctly physical in method. It accepted only verifiable protocol-sentences and their relations as meaningful strings (Neurath 1932–33) and dismissed all traditional philosophical statements as simple misunderstanding of the logic of language. In the methodological eyes of neo-positivism, philosophical statements are without exception pseudo-statements, vacuous statements. Philosophy can therefore be absolutely replaced by scientific logic — that is, by a logical analysis of the concepts and statements of the natural sciences. 'Scientific logic is nothing more than the logical syntax of scientific language' (Carnap 1934:iv).

R. Carnap understands his linguistic-scientific logic as a continuation and fulfillment of Wittgenstein's suggestions (1934:208). Above all he considers it an overcoming of Wittgenstein's aporetics, which are irreconcilable with his positivistic premises. Carnap aims to prove that even statements about the form of sentences, which Wittgenstein had explained were impossible, can be formulated after all. For him, syntax (in the sense of statements about sentences) is subject to 'exact formulation in the same sense as geometry' (p. 209).

Positivistic methodology must be especially interested in revising Wittgenstein's aporetic estimation of the possibility of scientific logic and in evaluating positively his personal estimation of the *Tractatus* as a collection of actually impossible sentences (which are meant to lead to insight into the impossibility of scientific logic). P. Ramsey and O. Neurath had already moved decisively in the direction of this thesis. Carnap now believes himself capable of advancing the alternative whereby he interprets scientific logic as the syntax of scientific language and — as suggested above — maintains it to be feasible: 'Pure and descriptive syntax is nothing other that the mathematics and physics of language' (p. 210).

The interest of the Vienna circle in language was occupied in the following years with developing a physical language as the universal vehicle for all sciences. Great advances have since been made in this working out of a logically correct formal dis-

course. The relevance of this effort to linguistics has in any case remained relatively slight and must remain so for reasons of system, since logical formal languages either entirely disregard or simplify excessively semantic problems of natural languages (in the interest of models of denotation for the relationship between language and reality). The stagnation of logical positivism in questions of linguistic philosophy has its reason in an insufficient cognizance of linguistic research. This stagnation can be overcome only through greater cooperation between the two disciplines (cf. Y. Bar-Hillel 1968).

5. LINGUISTIC PHILOSOPHY AS 'LINGUISTIC ANALYSIS'

Around the middle 1930s, L. Wittgenstein had turned remarkably away from the position of the *Tractatus*, marking what is today agreed to be the separation between his earlier and later work.

His Cambridge Lectures (cf. G.E. Moore 1954–55) and his *Blue and brown books*, dictated to his pupils, do indeed herald an important shift to new arguments. Still it is certainly misleading to speak of an essential and complete change in Wittgenstein. Too much of the later philosophy is already prepared in the *Tractatus*; the aporetic culmination in the *Tractatus* presses too much toward a new orientation of describable possibilities and realities of language in the social life of a linguistic community.

Unnoticed by Wittgenstein (who in his whole career paid no attention to linguistics, and linguistic philosophy, e.g. the continental one), the English Egyptologist, A. Gardiner, developed a number of arguments comparable to those of the *Books* and the *Philosophical investigations* in his own work, *The theory of speech and language* (1932). Gardiner knew and utilized extensively American and European linguistics and linguistic philosophy; he relied most on Bühler and Jespersen. His work is significantly dedicated to Ph. Wegener, whose *Untersuchungen über die Grundfragen des Sprachlebens* (1885) first validated the importance of the speech situation and the so-called 'sympathetic factors'. Gardiner plans in his book 'to look at the mechanism of speech as a whole' in order to free his perspective from the confinement of special grammatical problems. The goal of his discussion is to describe dialogue as to its social and cognitive value in context. 'The problem here to be studied is, accordingly: How does speech work?' (p. 5). The method he selects to answer this question corresponds, at least in principle, to that later publicized by Wittgenstein and consists in situational and contextual analysis with description of expressions: 'This, then, is my method: to put back single acts of speech into their original setting of real life, and thence to discover what processes are employed, what factors involved' (p. 6). This is Gardiner's premise: that talk is phenomenologically a human activity that requires at least two active partners with a common language who find themselves in confrontation and must want to understand each other. On

the strength of this premise, Gardiner orders linguistics, not under logic or psychology, but under SOCIOLOGY (p. 7).

Gardiner is philosophically interesting because of his primarily semantic and semasiological emphasis, which interprets the function of talk as a vehicle for the communication of meaning (p. 13). Gardiner opposes the definition of the function of language as employment of articulated sound-symbols for the purpose of expressing thought. Like Wegener before him, he stresses instead the consistently cooperative character of speech and its objective orientation (whereby objects are understood as realities both of the external world and of inner experience). Everything that is capable of being talked about must first of all be transformed in the speaker's mind into a thought (p. 22). The discussed object, like speaker and hearer, is not merely a part of speech but a factor of speaking.

The meaning of a word Gardiner defines as something intralinguistic (something 'philological'); it can be determined only through analysis of the application of the word, since it is not identical to the ostensibly accessible referent. 'We can perhaps best picture to ourselves the meaning of a word ... considering it as a territory or area over which the various possibilities of correct application are mapped out' (p. 36). The meanings of words cannot be assumed to be consistent and homogeneous ideal entities in the Platonic sense; in Gardiner's view they are categorical meanings which realize the attitude of the speaker in his linguistic situation (and so linguistic usage) to the things meant.

These theories of Gardiner's, which are still conditioned by psychological and mentalist conceptions, can, like those of Ogden and Richards, justly claim to have attracted needed attention to the sociological and anthropological premises of linguistic symbolism. They furthermore correspond to the field of interest that Wittgenstein beginning in the middle thirties advertised much more radically and definitively in his *Books*, the *Philosophical investigations*, and the *Bemerkungen über die Grundlagen der Mathematik* (all published posthumously).

Wittgenstein's late philosophy in the *Philosophical investigations* is considered by H. Wein (1963:69) to mark 'the most singularly *philosophical* of today's "linguistic philosophy"'. Here also, in the presence of numerous investigations, suggestions are sufficient.

L. Wittgenstein names as his themes in the Foreword to his *Philosophical investigations*: 'the concepts of meaning, understanding, sentence, logic, the foundations of logic, the states of consciousness, and other subjects'. He assesses the volume himself as a corrector of the 'serious errors' of the *Tractatus*. If the purpose of *Tractatus* is illumination of the logical structure of language, then Wittgenstein's starting point in the *Investigations* is the conviction that there is not ONE language with ONE logical structure, but rather many languages each of which comprises a plurality of 'language games'. These games can serve the most varied ends. The concept 'language game' attributes to language the portrayal of action or life-style. Such portrayal is always interwoven with non-linguistic social activities. Linguistic behavior must be seen as

integrated into the context of social action, of social behavior as such. Language as language games must, according to Wittgenstein, be regarded as a social action which is embedded in a situation qualified by all social norms, expectations, and practicalities.

The sociological and anthropological support for Wittgenstein's theory is similar to the sign-procedure theory of Ch. S. Peirce and Ch. Morris, which incidentally was not known to him. This support realizes itself in a discussion (of the rule concept) available since the *Books*, wherein 'rule' denotes the connective function between the sign user and the result of the sign usage. The importance of rules or the recurrence of signs is originally understood by Wittgenstein to be the condition of the meaningfulness of a sign.

If one attempts to align Wittgenstein's methodology with his central arguments, the following picture presents itself: the philosopher's nominalistic premise demands as its methodological justification the reduction of material questions to symbolic questions — that is, questions of comparisons of phenomena are replaced by those of linguistic substitutes. The turning to social realities makes necessary a philosophy describing the language games in actual situations and at the same time operational linguistic characteristics. The use of the means of language embedded in the conditions of socially integrated events for speech determines possible functions and meaningfulness of the signs used.

Language for Wittgenstein is an intentionally used instrument in the context of concrete social subjects. Linguistic philosophy can only succeed in describing linguistic transactions and the morphology of the usage of expressions by characterizing their meaningful occurrence in language games.

The definition of the meaning of an utterance cannot consist in its conveyance of an ideally unified message; it must instead be the confirmation of familiar similarities of actual usages. With this function, it can reveal criteria for the actual recurrence of expressions. With such qualifications, linguistic philosophy becomes the administrator of the grammar of a word. There is not only one method of philosophy but many, as it were many therapies.

Wittgenstein's influence on the analytical schools of Cambridge and Oxford as well as on Continental and American linguistic philosophy is concentrated in the following areas:

a) Wittgenstein opposes his operational model of meaning to all psychological or idealistic theories. He defines meaning as the socially predictable relevance of a recurrent sign-application;

b) philosophical analysis is a describing activity (not a doctrine) that leaves everything as it is, the search for a normative regulation of language still evident in the *Tractatus* is rejected as a false ambition. With this, Wittgenstein returns to Moore's practice of step by step description of arguments;

c) Wittgenstein operates on the premise that philosophical problems arise through

a 'hexing' of our understanding by the imaginative nature of language — a self-imprisonment in misinterpretable forms;

d) the RESOLUTION of problems is correspondingly interpreted as the DISSOLUTION of problems. With this approach, linguistic philosophy assumes a decidedly therapeutic character and fulfills itself as the diagnosis of inquiry;

e) the regulative principle for all judgments about 'correct' speech practice is the colloquial idiom where words have their 'home', where they continually play out their roles. The task of linguistic philosophy will continue to be to bring back words in philosophical texts from their metaphysical to their everyday usages;

f) in spite of an often attributed persuasion, Wittgenstein does not practice the POSITIVISTIC destruction or self-elimination of philosophy with which he has often been charged. What he does do is to dissolve philosophy as a system and direct it back to the task of clarifying what we believe to know by our intellectual activities. Such knowledge is obscured by the simplicity and predictability of routine experience. In the *Investigations*, Wittgenstein no longer insists that every philosophical utterance is and must be nonsensical. (Significant is the absence of the *Leiter-Metapher* at the end of the *Investigations*.) He maintains only that absolute and universal statements are nonsense because they are irrecoverable. Philosophy (linguistic and other) has the job of criticizing and classifying: 'We would like to bring order to our knowledge of linguistic usage: order to a specific end, one of many possible orders, not *the* order' (Paragraph 132).

Charlesworth (1959) accurately detects the paradox of the self-intelligibility of logical positivism and linguistic analysis: both tendencies were convinced that they could practice philosophy without prejudices, without presuppositions. Both the positivistic principle of empirical verification and the appeal by Moore and Wittgenstein to colloquial idiom as the final authority reintroduce the familiar problem of the constitution of mind and reality (as interpreted experience) that we recognized to be the principal theme of Continental linguistic philosophy of a Humboldtian kind.

The interconnections between linguistic analysis and neopositivism were indeed extensive, although both developed relatively independently. In the period between wide recognition of the *Tractatus* and Wittgenstein's lectures, logical positivism attained influence on analytical thinking and only in the form of logical metaphysical critique has this analysis become known outside England.

A.J. Ayer's now famous *Language, truth, and logic* (1946) deserves credit for this dissemination. Ayer, who had studied in Vienna under Schlick and Carnap, attempted about this time to reconcile both Moore's analysis and that of Russell (and implicitly of Berkeley and Hume) with the Viennese positivism.

Ayer's reformulation of Schlick's rigorous principle of verification has become well known. According to Schlick, verification could be achieved only by direct empirical observation. Since this conception excluded both natural laws and scientific hypotheses and prognoses as meaningless, Ayer freed the principle with the qualification that verification can also consist in observations that (can) LEAD TO direct verification

(cf. P. W. Bridgman's 'Operational Definitions' and Einstein's contribution of experimental arrangements of verification of a statement). In the question of analytical and synthetic sentences which is fundamental to neopositivism, Ayer decides that analytical sentences are only true on the strength of their linguistic symbols; analytical sentences are either tautological or true a priori (cf. Wittgenstein). On this basis Ayer dogmatically proclaims the elimination of metaphysics; because he views all sentences as either analytically true (but tautological) or empirically true, no place remains for metaphysical (a priori synthetic) statements. The occupation of linguistic philosophy is consequently nothing more than the critical analysis of linguistic logic with a view to reforming operational definitions. This is to be accomplished by transforming sentences into logically correct sentences. In this way, a reform and refinement of everyday speech shall be effected.

Ayer's position is dogmatically positivistic; it is below the skeptical and self-critical standard of the late Wittgenstein. In any case, his proposal clarifies the insights of the English analysts into the autonomy of the language game. It also demonstrates that an empiristic-logical philosophy must become just as dogmatically metaphysical as any classical dogmatic metaphysics.

6. LINGUISTIC PHILOSOPHY AFTER THE SECOND WORLD WAR

The situation of linguistic philosophy in Western Europe after the Second World War is characterized on the one hand by the acceptance of Wittgenstein on the Continent in the early fifties, and by renewed discussion of the recently extended and modified logical positivism on the other hand (logical positivism's supporters emigrated during the Third Reich either to the United States — Carnap, Feigl, Reichenbach — or to England — Popper, Waismann).[2] This extension of the horizon led to an examination of positivistic and analytic theories by advocates of the most varied schools and tendencies. The result is a mutual penetration of proposals and theories that can no longer even be classified.

There has been no important analytical school outside England since the war, and no neopositivistic school. An exception are the Scandinavian countries, which even now adhere to the analytical and positivistic approaches of the Anglo-American world.

In contrast, the influence of the idealistic linguistics of Weisgerber remains uninterrupted on the Continent. There is even a 'Bonn School' in which traditional linguistics continues to dominate and to renew itself. A strong affinity for linguistic philosophy is preserved in the school's discussion of the metalinguistics of Whorf. Cassirer, Bühler, Stenzel, and Lipps are energetically discussed. Multiple suggestions of Heidegger's existential linguistic theses inspire the influential hermeneutic theory

[2] An initial reception of Wittgenstein's thinking and its application to empirical linguistics appeared before the Second World War: J. Schächter (1935).

of Gadamer and his school. This influence is also apparent in Italian and French semantics and semasiology; but beside linguistic structuralist tendencies also gain approval (Lévi-Strauss, Martinet, Greimas).

In England, the analytical and positivistic schools are also sharply at odds; both begin with some significant revisions of their prewar theories. In form, the revisions are more critical and less dogmatic.

Since 1953, W. Schapp has developed an independent theory of 'histories' which resembles in a number of essentials the philosophy of Wittgenstein but which is not directly influenced by this philosophy.

The total West European situation can be summed up in this way: linguistic philosophy is not only accepted as an individual discipline but as a fundamental one, and its systematic role is sometimes exaggerated as the single meaningful philosophic theme of the twentieth century. It is, however, typical for the Continental situation that even following the War there were few universities with a chair in linguistic philosophy. Most linguistic observations are made by those who occupy places in the classical philosophical disciplines. Linguistic philosophy, a critical reflection on knowledge and metaphysics which is applicable to all philosophy and science, remains outside institutions.

The great significance of linguistic questions is witnessed by the realization that investigators from the most varied disciplines concern themselves with such questions: physicists (like W. Heisenberg, C.F. von Weizsäcker), mathematicians (like P. Bernays, A.I. Wittenberg), sociologists (like H. Albert, J. Habermas), anthropologists (like A. Gehlen, H. Plessner, C. Lévi-Strauss), and psychologists (like F. Hörmann) — and above all information theorists and communication scientists (like G. Klaus, D.M. McKay, L. Apostel, B. Mandelbrot, A. Morf).

Scientific and philosophic interest in linguistics after the war has attained unheard of proportions in the intellectual history of West Europe. It has stimulated a comprehensive program of historical treatments of linguistic philosophy, a reinterpretation and fresh interpretation of traditional philosophical systems in the light of language and in the face of consequently differently conceived problems of knowledge and the interpretation of (social) reality.

7. THE DESCENDENTS OF WITTGENSTEIN

On the foundation of Wittgenstein's late philosophy, two analytical schools have firmly installed themselves in England: the schools of Cambridge and Oxford.

The Cambridge School, also designated the school of 'therapeutic analysis', groups itself primarily around A.J. Wisdom (the second inheritor of Wittgenstein's academic chair, following G.H. von Wright). In his essays since 1933 (issued as *Other minds*, 1952, and *Philosophy and psychoanalysis*, 1953) Wisdom continues Moore's (his teacher's) and Wittgenstein's inquiries and methods, above all from the therapeutic

aspect of linguistic philosophy. Wisdom employs Wittgenstein's method in order to answer Moore's question as to the source and character of philosophical inquiries. He does not restrict himself to rejecting metaphysical questions on linguistically critical and logical grounds; he goes on to attempt to show the errors which proceed from such questions. Like the psychoanalyst, the therapeutic philosopher must through his diagnosis bring other philosophers to a recognition of their errors. The goal proposed is the dissolution of philosophy as doctrine and its rejuvenation as activity. This will be achieved first by a new evaluation of metaphysical utterances as enlightening paradoxes and second by the stipulation that philosophers should always be trying to say what cannot be said.

Among other students of this wholly unsystematic school (whose only redemption is its therapeutic effect) are: G.A. Paul, M. Lazerowitz, and N. Malcolm (who has become known by his biography of Wittgenstein, 1958). The considerably more influential Oxford School, also designated the school of the 'philosophy of ordinary language', groups itself around G. Ryle and J. Austin. This school also attempts to establish an independent position with reference to Wittgenstein. Among its members are H.L. A. Hart, S. Hampshire, S.E. Toulmin, P. Nowell-Smith, I. Berlin, G.E. Anscombe, and in a more general sense, K. Baier and J. Urmson.

According to G. Ryle, Wittgenstein's accomplishment was the provision of a method suitable for Moore's informal analysis. The Oxford variation of linguistic analysis is undogmatic and bears no resemblance to positivistic reductionism. It is to be conceived as an instrument or method of philosophy (not as the whole of philosophy) within whose boundaries the actual philosophizing may be done. Moore and Wittgenstein share the conviction that language and speech cannot be characterized with a unified logic. A grammar of the language game is required. The movement is agreed: every kind of utterance has its own logic which is conveyed by the usages that effect it. The school is also agreed on a theory of semantics which conceives of meaning as resulting from usages of expressions and which aims to define messages in terms of these specific usages. Every word in colloquial speech can be cited as final authority for judgment of correct or incorrect use of words. Each word has not one fixed meaning but many meanings in many situations.

Ethical problems understood as meta-ethics which seek finally to describe the nature of ethical utterances are the major preoccupations of the Oxford School (Hare, *The language of morals*, 1952; Nowell-Smith, *Ethics*, 1954; Toulmin, *An examination of the place of reason in ethics*, 1953).

While Ryle has become known through his theory of category faults and the anti-Cartesian theory of consciousness (another opponent of Cartesian fallacy is Strawson 1950), the accomplishment of J. Austin lies in his attention to action-denoting words ('performatives' 1962) whose role in jurisprudence has been worked out by Hart.

The experimental character of philosophy has been especially stressed by S. Hampshire (*Changing methods in philosophy*, 1951). G.E. Anscombe, R. Rhees, and G.H.

von Wright are notable as editors and trustees of Wittgenstein's unpublished writings.

The analytical philosophy which in Harré's view was grounded more on reaction than on insight (Foreword to Waismann 1965) has already passed its peak. Its contribution to the history of philosophy consists in its attempt at a productive and radical self-criticism of the philosophy which Moore had awakened from its post-Hegelian slumber — an attempt at therapy through diagnosis and analysis of the linguistic premises and forms of expressions employed in philosophical utterances. In analytical philosophy, the Socratic idea of philosophy as undogmatic self-critical movement of thought and as discussion of the premises implicit in intellectual talk becomes vital once more. In an age dominated by technology, philosophy assumes the form of a theoretical-analytical activity. It is to be understood as the place of reflective unrest, as a technique for asking questions, as a methodical mistrust, as a medium for critical comparisons. Clarification of knowledge and consciousness and questioning of the preconditions for knowledge gaining are considered by the proponents of analysis to be more justifiable activities for philosophy than the futile attempt to juxtapose a nonscientific system to the prevailing scientific one.

Several commentators have endeavored to offer an inventory and assessment of analysis: F. Waismann (1965), J.O. Urmson (1956), and M.J. Charlesworth (1959). For a critique of analysis from the side of generative grammar, cf. Fodor and Katz (1964).

8. CONTINENTAL LINGUISTIC PHILOSOPHY AFTER THE SECOND WORLD WAR

Unnoticed by academic philosophy and still without influence worthy of mention is the original linguistic philosophy of W. Schapp first revived by H. Lübbe (1960–61).

Schapp begins his philosophy (1953 and 1959), which shows the influence of Husserl's phenomenology, with the 'history' [*Geschichte*] as irreducible starting point. That is, he begins like Wittgenstein, not with elements but with a given structure. The individual is submerged in 'histories' as the carriers of 'meaning'; only if and when he is thus submerged do details, observations, and other experiences assume their (appropriate) meaning. Language itself is such a history; it relates the members of the linguistic community. The sense of utterances is dependent on the relevant linguistic history in which they have their place. It follows that the interpretation of a concept is likewise dependent upon context; it must be determined and portrayed in the environment of linguistic histories (cf. Wittgenstein's language games). The names of things are titles of past and future histories.

In this premise and in his radical rejection of every philosophical terminology, Schapp stands in close relationship to Wittgenstein's language game- and situation-theory of meaning. His attempt to free himself of the preconceptions represented by (implicitly) ontological interpretations of the traditional grammatical categories is

also reminiscent of Wittgenstein. Schapp endeavors to make grammar once more problematical when he reinterprets it in terms of 'histories'. 'We submit experience to vivisection while the others probe the dead form of the sentence' (1959:323).

Schapp believes a theory of knowledge to be an impossibility. The only meaningful approach is one that works with concrete discourse (as the linguistic demeanor in histories) and seeks to discover descriptive keys to the function and importance of language and its elements.

An equally original but much more suggestive addition to more recent philosophy is the ontological-existential linguistics of M. Heidegger (1954, 1959).

Language is here elevated dogmatically to the revelation of being [*Sein*]. The individual is not the speaker; 'language itself' is the speaker that expresses being. Man speaks only in the sense that he listens to the 'being' addressing him. Being is demonstrated by language, is the fulfilled word. Things are only things by virtue of language. Man understands givens only because he already understands being (that is, he exists in language). Without being there is no language.

This definition of the connection between language and being circumscribes in Heidegger's existential ontology the problem of the constitution of mind through language. Of course Heidegger makes this connection mystical when he declares language to be 'protecting goddess of being' and the 'house of being'.

The hermeneutic tendency of his philosophy is especially obvious in his exposition of the problem of understanding. Heidegger attempts in his famous etymologies to reconstruct the original defining power of words from their histories (as he understands them). The speech of being to which he is trying very hard to listen is 'the echo of the silence of inner reflection'.

In his word theory, Heidegger reverts back to Husserl and distinguishes between audial configuration, meaning, and the denoted thing; but he mystifies the word in saying that it is grounded inextricably in being if it is 'actually' a word. Only when a word is taken as a word — that is, when it has been stripped of its character as sign and meaning — only then can one hear the address of being in that word.

The key to Heidegger's hypertrophic style lies in the realization that for him thinking is located in the process of language itself, only after that in man; man's thought is 'essential' only when it corresponds to the language in words. This moreover is only possible when the ordinary meanings of words are avoided in favor of the essential meanings inherent in the words. Language speaks. It plays with thought through its concepts. Only when the word is thinking are speakers awakening it. (For criticism of this theory, cf. Schweppenhäuser 1958a.)

A comprehensive survey of linguistic problems in an existential framework is also present in the writings of K. Jaspers (1948; 1964 pagination is cited). Jaspers looks at philosophical tradition and concludes that 'knowledge about language' belongs to the foundations of 'philosophical consciousness'.

In his analysis of the source and accomplishment of language and of its relation to thought, Jaspers treats critique of language and the relationship of language and

philosophy on the one hand, and the relationship of linguistic theory and philosophy on the other. The nature of language in his opinion can not be specified by an empirical science of language because language is a form of 'embracing [*des Umgreifenden*] from which we cannot free ourselves' (p. 10).

The primary phenomenon of language for Jaspers is meaning in the sense 'that I am directed purposefully by the sound to a distant content' (p. 13). Meanings are not autonomous entities. 'It is in words that meanings become accessible' (p. 14). The meanings of words are our imaginations and concepts which 'on their part link up to the being of things in the world. But our imaginations and concepts and with them the being first become clear to us in word-generation; they are then distinctive and firmly possessed' (p. 15).

With this argument, Jaspers stands in the arena of constitutionalism and accepts it as the central theme of his philosophy. Thinking is bound to speaking because thinking requires sensuous reference points which can be supplied only by language. With a metaphor akin to Herder's, Jaspers describes the function of language as sensuous articulation of the motion of thought. Language realizes the sensuous as definite and communicable. Jaspers clearly relies, on the one hand, on the historical dimension for definition. On the other hand, he cites the humanization of every speaker through language and linguistic tradition. Language and speakers therefore constitute a functional unity and whole much like that of speaking and thinking.

Every philosophy has to rely upon a consciousness of language, its nature as images and often misleading metaphors. The spiritual stance of a philosopher can be critically specified by a study of his style and choice of words.

Jaspers separates reflective linguistic philosophy from linguistic science by remarking that for the former language is not only an object of inquiry but also 'a boundary'. Linguistic philosophy is directed to 'the ground of our being, where initially being and thought and truth are simultaneously united in language ... linguistic philosophy seeks in language the ground of transcendence' (p. 78).

A number of philosophers and linguists whose work belongs to the realm of existential philosophy emphasize differing aspects of the Heidegger-Jaspers panorama according to their disciplines or major interests.

A speculative philosophizing about linguistics is offered by E. Otto in his *Sprache und Philosophie* (1949a). He makes a contribution of linguistic philosophy to ontology when he attempts to combine all categorical foundations of human language into a universal grammar.

Language study as analysis of self-consciousness and linguistic philosophy as revelation of mind are practiced by the philologist B. Snell in his *Der Aufbau der Sprache* (1952).

Understanding of language as understanding of being is the transference of Heidegger's existentialism into linguistic philosophy that is attempted by H. H. Holz (*Sprache und Welt*, 1953). Language and myth receive a hymnic-metaphoric treatment from W. F. Otto (1967). An ontological interpretation of linguistic facts (specifi-

cally the copula 'is') is advanced by W. Bröcker and J. Lohmann in essays in the periodical *Lexis* (1948).

In accordance with existentialism, philologists and philosophers also speculate on the interpretation of literature (following Heidegger's example) with a view to discovering the 'characteristic being of language'. Here one could name W. Schadewaldt, H.-G. Gadamer, F. Martini, J. Pfeiffer, and E. Staiger. A survey of such tendencies and their great appeal has been compiled by G. Siewerth in his collection of essays, *Philosophie der Sprache* (1962).

Of particular interest in this connection is the hermeneutic theory of H. G. Gadamer which is developed in *Wahrheit und Methode* (1965). Language is here evaluated as *Lebensvorgang* of understanding, as a process of revealing the world (p. 422). Language does not therefore constitute a self-sufficient existence contrasted to that of the world; it has its 'own mode of existence only in that the world shows itself in language' (p. 419). Language is here, as in Heidegger, credited with an active nature and is considered as discharge of hermeneutic understanding. All previous attempts to describe language and its functions rationally failed, in Gadamer's view, because the lively 'onrushing' nature of language as happening cannot be forced into categories and classifications.

A middle ground between the dogmatic theses of Heidegger and the non-existential philosophies is the goal of F. G. Jünger in his *Sprache und Denken* (1962). E. Jünger (*Geheimnisse der Sprache*, 1963) concerns himself with a semantic theory of the sound which is relevant only to the literary aspects of language. A new version of expressive doctrine in the speculative area between psychology and philosophy is advanced by H. Strehle in a work hailed as the beginning of a new branch of research: *Vom Geheimnis der Sprache* (1956). A 'critique of historical reason' which surmounts all exclusive characteristics of linguistic philosophy and scientific linguistics, and also solves all hitherto unsolved problems from the origin of language to the criticism of ideology, is the promise of J. Lohmann in *Philosophie und Sprachwissenschaft* (1965). J. Brun (1961) and E. Zwirner (1962) have worked out a theory of linguistic signs influenced by that of Cassirer.

Projects oriented toward rethinking and promotion of traditional philosophy from the linguistic aspect make up the works of B. Liebrucks and E. Heintel. In his opus of six projected volumes (*Sprache und Bewusstsein*, 1964–1966), Liebrucks develops a dialectic philosophy to define the relationship of language and consciousness. In wide-ranging investigations of the thought of Descartes, Kant, Hamann, Herder, Humboldt, Hegel, and Marx, he explicates in encyclopedic breadth his theses of the linguistic nature of consciousness and of philosophy. He recommends at the same time the replacement of historical philosophy with linguistic philosophy.

The works of E. Heintel are traveling in nearly the same direction. He would like to resolve the 'singular tragedy of German intellectual history' which he regards as the failure to 'unite' in the time of German idealism 'the deep understanding for the nature of language on the one hand [Hamann, Herder, Humboldt] with the *niveau*

and seriousness reached by methodical philosophical reflection on the other hand' (1960:xviii). Heintel intends a linguistic interpretation of transcendental questions which would integrate now-differentiated discussions of comprehension and constitution of mind (1967).

Between the existential-hermeneutic and transcendental-dialectic groups, there is a third group of authors worthy of notice. Their work is without presuppositions and assumes a conciliatory role in the dispute between philosophical tradition since Humboldt and the theories of logical positivism and analysis. Here it is most appropriate to name K.-O. Apel, E. Specht, H. Wein, G. Jánoska, and P. Krausser.

K.-O. Apel (1959, 1963, 1964–65, 1966) offers a number of penetrating analyses which bring hermeneutic and positivistic philosophies closer together through reflection on their common elements. It should be noted that an exact account of contemporary standpoints elevate his work above a hasty compendium.

Another middle position which is anthropologically oriented and is indebted to Peirce, Morris, and Wittgenstein on the one hand and Descartes, Nietzsche, and N. Hartmann on the other is held by H. Wein (1960, 1961, 1963, 1965). He stresses in the framework of his inquiries into twentieth century linguistic philosophy the aporetic outlook of analytical linguistics. He accents the tentative sign theories of Peirce and de Saussure and expands them with anthropological considerations of the sign situation and the model for the language game.

E.K. Specht (1963, 1966, 1967) endeavors to formulate an ontology according to the experiences of neopositivism and linguistic analysis. P. Krausser (1959), who has become well known as the translator of B.L. Whorf, combines phenomenology, ontology (in the sense of N. Hartmann) and metalinguistics.

G. Jánoska has outlined an independent 'ontosemantic' method which attempts to resolve nominalistic and realistic tendencies, the role of constitution and receptivity in preliminaries to perception and knowledge into one model, that is correctly oriented toward the social reality of language. The model is contained in his book *Die sprachlichen Grundlagen der Philosophie* (1962), which must be counted among the most plausible meditations in more recent linguistic philosophy.

The advantages and weaknesses of past linguistic philosophies are weighed also by J. v. Kempski (1964) who is especially important to philosophy because of his action-theory treatment of reality as the realm of linguistically indicated possibilities for actions.

Central questions of the theory of knowledge concerning the relationship of language, thought, and reality are discussed by the Frenchmen P. Chauchard (*Le langage et la pensée*, 1956) and M. Foucault (*Les mots et les choses*, 1966).

Building on the foundation of philosophy of science and logic, another group of authors tries to render linguistic questions more precise and to clarify the criteria for their solution.

G. Frey (1965) investigates the reflexive structure of consciousness in relation to language and seeks to demonstrate structures that manifest themselves in language.

A significant role in the representation of logical-positivistic and logistical thought in the German-speaking area falls to W. Stegmüller (1954, 1956, 1957, 1965) who is especially interested in promoting a rational and unprejudiced discussion of positivistic and analytical tradition and in freeing crucial passages of the neopositivistic theory from dogmatic tendencies. In this interest he is an interpreter of Carnap, Tarsky and followers, and of Wittgenstein.

A critical assessing analysis of the most important fundamental theories of logical positivism and analysis has been set forth by H. Delius (1958, 1963). With G. Patzig, E. Scheibe, E. Leinfellner, H. Haller, and H. Lenk, Delius belongs among the few scientifically and logically trained linguistic philosophers in Germany and Austria.

A simultaneously positivistic and analytic theory of meaning whose distinctive feature is the designation of meanings as 'officeholders' has been advanced by N.E. Christensen (*On the nature of meaning*, 1965).

A clearly exceptional position in this panorama is taken by P. Lorenzen. His proposal for an operational logic and its attendant action theory of language has inspired a number of pupils (F. Kambertel, K. Lorenz, J. Mittelstrass). W. Kamlah (who in recent years has brought his views very close to those of Lorenzen) and Lorenzen begin (in 1967) with the assumption that we always speak as people among other people and as people in the world. Any fundamental theory of knowledge must proceed from this assumption; that is, critique of knowledge is effectual only in the form of critique of language. From elementary and easily verified forms of utterance (predictators and elementary utterances), the authors postulate a systematic structure of linguistic actions and their possible interpretations. It is but consequent that the authors and their followers plan a proposal for reasonable discourse about behavioral norms — that is, a linguistically critical operational ethic.

A Marxist philosophy conditioned by logic, theory of signs, and cybernetics is pursued by G. Klaus (1963, 1964, 1965a, b), E. Albrecht (1967), and W. Schmidt. (The last places special emphasis on semantics.) While Klaus strives more for semiotics and information theory with specific reference to linguistic problems of the theory of knowledge implicit in them, Albrecht sets out to bring in traditional linguistics, logic, and philosophy as props for his mimetic proposal for a Marxist interpretation of speech and thought. Logical-linguistic analyses directed toward a semiotic semantics of reality-portraying sign systems are submitted by F. Schmidt (1961, 1966). The ideological aspects of middle class neopositivism from a Marxist viewpoint are explicated by A. Neubert (1962).

In addition to these studies by professional philosophers, a great tradition has continued to expand since the Second World War: the tradition of philosophical reflections rendered by specialists in linguistics or language science.

Authors like Weisgerber, Trier, Porzig, Glinz, G. Kandler, H. Gipper, and S. Öhmann, or J. Fourquet continue to work out positions originally developed before the war under the influence of more recent research from all the neighboring disciplines. In some cases, they begin anew on the basis of this information. Under the influence of Weisgerber, research into the mother tongue with its typical pedagogical

and philosophical framework receives a new impetus (E. Rothacker). Field study and questions of the linguistic world picture [*Weltbild*] attain a new actuality through confrontation with B. L. Whorf's metalinguistic and American anthropological linguistics (Öhmann 1951); a revealing spectrum of these efforts is available in the Festschrift for Weisgerber: *Sprache, Schlüssel zur Welt* (1959).

While onomasiology and semasiology (K. Baldinger 1964, 1966; B. Pottier 1964; K. Heger 1964) prefer to treat semantic questions in a way reminiscent of Ogden and Richards (a way which had been revived and modified in the treatises of S. Ullman), a functionalist and structuralist persuasion in questions of semantics and knowledge-theory dominates the work of the French linguists A. Martinet (1962) and A. J. Greimas (1966).

Suggestions for a philosophical semantics (cf. S. J. Schmidt 1968b) worthy of contemplation are offered by J. R. Firth (1957) in his essays between 1934 and 1951. Like Wittgenstein, Firth stresses most heavily the importance of context for the development and effectuality of the meaning(s) of a word. Consistent with this perspective, he designates the task of linguistics as study of the 'speaking person in the social process'. The meaning of a word is the function of its linguistic form in various contexts: '... the complete meaning of a word is always contextual, and no study of meaning apart from a complete context can be taken seriously' (1957:7). The technique of a linguistic semantics can in the view of Firth only be accomplished by 'a serial contextualization of our facts, context within context, each one being a function, an organ of the bigger context and all contexts finding a place in what may be called the context of culture' (p. 32). These suggestions should be fruitful for a textually oriented linguistic philosophy. Concerning philosophical questions in the investigative areas of generative grammar (like *ideae innatae*, semantic features and categories, language and thought), several scientists attach themselves to Chomsky and his school: M. Bierwisch (1965, 1966, 1967), W. Motsch (1965), K. Ammer (1963), and G. F. Meier (1966).

An atypical position in the group of linguists interested in philosophy is assumed by P. Hartmann, who since 1957 has been dealing directly in philosophical questions conditioned by a broadly founded linguistics. Hartmann's long work volunteers a large number of important considerations for a linguistically informed philosophy. Especially relevant is his theory of meaning which recognizes the text as the primary sign. Also central is his strong emphasis on speech forms and his linguistic philosophical explication of language as the rendering of logic and character which installs above the level of individual matters a level of categorical classifications and defines the construction of utterances as the product of ordered combinations of pluralistically informative complexes.

S. J. Schmidt seeks to present linguistic philosophy as modern theory of knowledge and its unfolding as semantics and methodical literary study, reinforced and continuously corrected by general linguistics like that of P. Hartmann. Schmidt's principal authorities are Wittgenstein and the premises of the action theory.

An abundance of philosophical observations is always available in systematic or

historical treatises prepared by individuals or schools. A few such sources may be enumerated here: K.-O. Apel (1955–57), H. Lübbe (1960–61, 1962), J. Derbolav (1953, 1959), G. Küng (1963), H. Lauener (1962), J. N. Mohanty (1966), H. Schweppenhäuser (1958a), P. Meinhold (1958), E. K. Specht (1955–56, 1963), H. Geissler (1959), K. Ulmer (1950–51), G. Thiel (1965), W. Wieland (1962), and H. Wein (1965). These have all assembled and commented on various aspects of linguistic observations from Plato and Aristotle over Dante and Vico to the classic linguistic philosophies of the eighteenth and nineteenth centuries. The broad discussion of Wittgenstein is documented in many studies throughout Europe: B. R. Drudis (1952), Sánchez-Mazas (1953), F. Barone (1951), N. Abbagnano (1953), P. Chiodi (1955), D. Campanale (1956), J. Hintikka (1955), M. T. Antonelli (1956), E. Stenius (1952, 1960), J. Hartnack (1960), P. Hadot (1959), C. A. van Peursen (1959–60), J. F. Mora (1960), W. Stegmüller (1965), among others. (A survey of the situation and spectrum of present philosophy-oriented language studies in Germany is given in the new volume of the Eighth German Congress for Philosophy 1966, Heidelberg, 1967.)

A history of linguistic philosophy or a tentative comprehensive system has of course yet to be written. This insufficiency damages the historical consciousness of the discipline and discourages its constructive representation in relation to other philosophical disciplines.

Finally, it is necessary to mention some authors who have expressed themselves with regard to themes of linguistic philosophy from their places in various other disciplines.

From the theological side, M. Buber (1967), R. Guardini (1967), G. Söhngen (1962), H.-R. Müller-Schwefe (1966), and P. Wolff (1950) have endeavored to validate language as the word of God and the medium of revelation.

The role of language in jurisprudence and its vocabulary is dealt with by D. Horn (1966) in a way which takes linguistic, philosophical, and communication-theory factors into account. His eventual goal is a semantic communication-theory.

Speculation about the origin of language has been undertaken by M. Kahier (1960), R. Fester (1962), B. Rosenkranz (1961), A. Drexel (1951), E. Rossi (1962), and, in encyclopedic breadth, A. Borst (1957–63).

The relationship of language and technical science is the theme of H. Ichreyt and L. Mackensen (1954).

An instructive survey of the discussion of language psychology is found in H. Hörmann (1967) who also includes an exhaustive bibliography that documents all details.

If one examines present-day West European philosophy, he is aware of continuing interest in linguistic considerations, but he also sees that the sensational nature is waning and that the exaggerated valuation of linguistic philosophy will correct itself. What remains is the insight that there is hardly a discipline concerned with theoretical and methodological questions that can come to relevant conclusions about communi-

cative processes without a corresponding fundamental account of the role of language in the acquisition of knowledge.

This broadening of theoretical and philosophical inquiries, however, is hardly an indication of systematic advance toward linguistic philosophy as an independent discipline. Until the 1960s, West European philosophy (perhaps with the exception of England) was principally concerned with making up time lost in the war. Prewar theories were taken up and worked into newer conceptions; philosophies from outside the Continent were not before now taken properly into account.

It is significant that the impetus for productive new questions has in recent years seldom originated with philosophers; it is rather to be credited to linguists, especially generative grammarians, who have in the U.S.A. developed their own philosophical tendency (Fodor and Katz). New energy is further to be credited to the logicians, advocates of information theory, psychologists, and anthropologists.

The main force of present inquiry is exercised in the areas of epistemology, semantics, and translation-theory. The latest development is that of textual theory.

It is clearer than ever before that a meaningfully and rationally pursued linguistic philosophy is now possible and in the future only in cooperation with all language-related disciplines — above all with linguistics, with sign-theory, information-theory, psychology, and anthropology.

Only with the broadest base can linguistic philosophy hope to attain a form capable of productively uniting and furthering both of the tasks inherited from traditional philosophy:

a) the interest of theories of knowledge in the importance of language for the possibility, limitations, and certainty of knowledge;

b) the critical impulse to permanent discussion of the truth value of scientific and philosophical theories and methods.

Humboldt and Wittgenstein will most probably continue to represent antipodes which are to be accepted as complementary directions in a self-critical, non-aporetic linguistic philosophy.

(written in 1968)

SECTION TWO: LINGUISTIC THEORY IN WESTERN EUROPE

1. OPENING REMARKS

It is helpful to follow a portrayal of philosophic beginnings and developments with a sketch of theoretical events in Western Europe. It can be a summary sketch insofar as these initial premises and developments have, at least in the field of language science, become reasonably widely known. With their characteristic tendencies and contributions, they have indeed become inextricably bound up with the further progress of linguistics (*Sprachwissenschaft*) itself. Aside from this, inaugurators of new approaches and their schools have maintained continual contact with the kind of transactions

represented by monographs, since many such essays have already assumed their important place in the history of science. For this reason we are justified in constant reference to them as well as to the rich bibliographies.

In the matter of the boundaries of a thematic territory, something of this sort is understood under language THEORY — in contrast to linguistic philosophy — all research that has been concerned with the attainment of theoretical insight into and understanding of language as a self-sufficient complex of phenomena. This means on the one hand that the concept underlying such research is one which has not yet assumed the modern technical interpretation of a systematizing description of structures (for instance, in language analysis); rather, it survives as a broader and partly heuristic speculation. It also means, on the other hand, that one will have to distinguish and deal with both implicitly and explicitly theoretical studies and terms. EXPLICITLY theoretical terms can be regarded as those which undertake the task of formulating a theory of language — that is, to reduce its structures to typically disposed systems (for example, the theoretical treatises of Bühler). IMPLICITLY theoretical statements are those which, despite the fact that they are not in their essentials primarily or thematically theoretical, still have theoretical premises, implications, or consequences (for example, some special linguistic inquiries).

The portrayal will follow a sketch of the general background. Nonlinguistic influences which might cause confusion by ordering them under individual cases will be discussed first.

2. THE END OF THE FIRST WORLD WAR

The situation after the First World War presents something like the following appearance: explicitly theoretical beginnings which had already been available before 1918 and which were amenable to worthwhile elaboration are few. Very well known and also extensive were the psychological works; such as the psychology of Wilhelm Wundt, whose lasting influence can be detected in citations from many linguists as late as the thirties. The concurring viewpoint of Anton Marty is accorded professional attention even today. While Wundt had wished to understand linguistic configurations and their peculiarly structured events within the framework of his own type of semantics, namely within his doctrine of apperception, Marty concerned himself primarily with clarification of the question of how one could arrive in a plausible way at universal statements about language. The context of this question shows a contrast to the thought of Husserl in the sense that an empirical avenue to the fundamental characteristics of language is opposed to his psychologically a priori grammar.

Controversies of this and other natures which were yielded by other philosophical positions have often thoroughly agitated and otherwise conditioned the actual practice of language science, especially the so-called general reflections on language as self-sufficient manifestation. In spite of controversies, actual examination of the scientific object — that is, analysis of languages or actual interpretation of linguistic

structures — remained as a rule without influence from methodological considerations. The first reason is that these illuminations had not originally been derived from linguistics itself. A second reason is that, in the wider context, linguistics appealed only to the historical interest. Therefore, more penetrating interpretations of discovered material and procedural possibilities were seldom required to play any role at all in specialized scientific investigation. This was especially the case in the very country in which *Sprachwissenschaft* had won considerable respectability in the universities and could consequently have played a leading part in intellectual life: in Germany.

Of much greater importance are the different thoughts of Saussure; although they were also in circulation before the First World War, they proved to be more centrally relevant to existing language science. They not only arose directly out of this discipline, but they also corresponded to an entirely different systematization of linguistic inquiry. In both senses, Saussure's persuasion parallels the nearly contemporaneous rise of phonology: this approach was also suggested by work on linguistic configurations; its appeal was not clearly attributable to the interests of another discipline — for example, of psychology — and phonology likewise afforded a fresh method of scientific inquiry. Here it is adequate to make the simple confirmation that both the phonological and language-system viewpoints have, so to speak, justified their right to prominence in the discipline and that they quite early yielded criteria which have made the newer and more general linguistics since the turn of the century unthinkable without these two components. It must, however, be admitted that, because of the indicated situation in German *Sprachwissenschaft* and in German philosophical faculties, both the new phonology and the contributions of Saussure did not really become accepted or even recognized in Germany except in a fragmented and oversimplified way. In general, this unreceptiveness is another example of characteristic academic intransigence in the country once notable for the decisive impetus it lent to research in linguistics. The context in which Saussurian thought WAS employed fruitfully was a limited one: application of thought about language systems to the lexicon and word-study (Trier, Porzig, Weisgerber).

It must indeed be regarded as an important and singular curiosity that in a large area and one formerly competent in the practice of linguistic research there should be through almost fifty years not more than a minimal development of the THEORETICAL BASIS of language science. The international research situation was favorable to advance. Such an advance would only have been possible in the confines of science oriented universities. In Germany, or, more specifically, in the German universities, intransigent viewpoints and those occupied with opposed conceptions constituted a kind of *communis opinio* which accordingly dominated almost completely the German philosophical faculties and with them the developmental possibilities of *Sprachwissenschaft*. Their conviction was that a true science must have the historical component as its major object and decisive horizon of understanding. Therefore, the role of history can hardly be taken seriously enough and can hardly be elaborated at suffi-

cient length. Therefore, the role of language history and that of the historically comparative emphasis which is its legitimate manifestation were the only necessary and sufficient occupations of *Sprachwissenschaft*. To this is to be added the so-called 'victory over positivism' — that is, over the neo-Grammarian position — by the 'idealistic' school (Croce, Vossler, Lerch, Bertoni). Their axiom of the primacy of the individual mind was reconcilable neither with system-doctrines nor with the sociological component of the Saussurian position. So the sketched isolation of German *Sprachwissenschaft* appears motivated not only by social factors but also by actual theoretical splits (cf. the harsh condemnation of the 'idealists' in Jordan 1962).

The consequence was that many new and promising ideas, beginnings, methods, and claims were not seriously entertained in German universities. This snobbery was in effect even before the time of the so-called Third Reich, during which time, of course, it became inappropriate for primitive political reasons to interest oneself in foreign scientific progress. Even though it is peripheral, this fact must nevertheless be included in any general description of the state of language theory because it was the reason for the uneven development of such theory in Germany. That a great area of linguistics proper should forfeit its contribution to intellectual development for not less than four decades could not remain without implications for the entire field. One can clearly discern within the confines of this single discipline the early tendencies to splintering and partisanship which had long before certain political events prepared and disseminated themselves. They can be ordered under a much more powerful, culturally crucial, but still conceivable theme such as the general attitude and education of a society or land. Subordinated in this way, they would have to be studied as a special topic.

The picture of ideas and developments in Western Europe shows the following universal configurations which define its detailed markings in an infrastructure: there are the prewar movements which continue to exert influence; aside from the thoroughly differentiated and tradition bound philosophical and linguistic deposits (Section 1), these may originate in neighboring disciplines which have become concerned with language (such as linguistic psychology). In this case they may still come in large part from the German realm. They may also originate inside linguistics itself; in this second case they tend to come from outside Germany and to quickly establish themselves. In Germany, with its continuing almost exclusive emphasis on historical research, few modern contributions are found which have an impact on work in the universities.

An interesting situation is thus brought about which can be seen in a simplified overview: Western Europe possessed in the first half of this century still vital older philosophies; these continued to undergo further development. Other characteristically new outlooks were added (for example, existentialism). More specialized linguistic theories like the psychological were also pursued — these were favored by German participation on the international level. Work is then carried out on special approaches

oriented to language itself and therefore more directly applicable to linguistic terms. These approaches gained currency outside the original central area for linguistics, so that Germany was surrounded by numerous centers which soon came to condition international trends without finding more than an echo in Germany. Prague, Geneva, Copenhagen, the United States, and London became promoters of the newer theoretical thought and derive from this status an ever stronger and more active role in pure linguistics. The few attempts to introduce new findings into Germany cannot escape and rise above a (perhaps justified) narrowness.

It is to be noted in passing that a more precisely historical review of linguistics in the broad or narrow sense with attention also to its attained level of INTELLECTUALITY can also be instructive. Such a review would naturally presuppose an account of the connection between scientific progress and the surrounding society. Knowledge of this connection would also be valuable in the broader context. Experience in many lands demonstrates that there is a very regular progress along the scale of diminishing intellectuality. A hobby which has descended to a state of sterile and uninteresting activity — nevertheless maintained with maximal shrewdness and differentiation — is contrasted to an attitude dependent upon the very *Zeitgeist* and no longer 'intellectual' in any ordinary sense. This latter can degenerate into methodological trivia incapable of interpreting even the *Zeitgeist*. It is clear that such working and living conditions and *Zeittendenzen* can play an important role upon the acquisition of just such rarified and fundamental perceptions. Theoretical reflections can in themselves — like those of philosophy — easily reveal traces of contemporary global opinion. In general it is safe to conclude that the initial impression and secondary development of a science are considerably influenced and harmonized by the thought patterns of the time.

3. NONLINGUISTIC APPROACHES AND DEVELOPMENTS

The explicit (thematic) establishment of a theoretical basis for the comprehension and systematization of linguistic phenomena usually comes from nonlinguistic inquiries within the broad context of language science; it often comes from psychology. Outside sources form a bridge to the specifically linguistic philosophies and points of view enumerated above.

It will be profitable to review the way in which a THEORETICAL CONCEPT was understood at the end of the First War. The status of a THEORY as it was meant and cultivated in those days can briefly be described as a methodical or scientifically precise understanding and systematization of basic or common characteristics of a phenomenon such as language. These characteristics are recognizable as belonging to the phenomenon when it is perceived, so that observation, classification, generalization, and determination of dependence come together in the theoretical formulation. The later, more rigorous theoretical concept, whereby the theory of a language can be

identified with its grammar, was not yet in circulation. The earlier ideas of theory were all somehow influenced by ontology; they were always oriented to a grasp of the endowing essential nature of things. In terms of this persuasion, a THEORY OF LANGUAGE was a structure of statements intended to denote such essential features (*Grundcharaktere*) of language which, in turn, specify particular functions in given languages. To such a theoretical conception, this was legitimate. That is, language theory must be constructed 'from the outside in', beginning with that in relation to which language has its function.

3.1 *Psychology*

It seems justified that we move past the already mentioned older psychologies of Wilhelm Wundt (1900) and Anton Marty (1898) without further amplification. They stem from the previous century in their themes and approaches, and despite all the undeniable relevance of their individual insights, they do not have direct influence on more recent linguistic theories (on Wundt, cf. Hurwicz 1918). A decidedly new and suggestive approach was contained in the ideas of Karl Bühler which had been conceived as early as 1907 and which were published in 1934. Not the least characteristic of this author's fresh departure was his increased eclecticism and the systematic nature of his presentation. His theory attempted to conceive of the character of human language in such a way that similarities of sign-traffic between men and between animals can be separated from their constitution as 'man's subconscious judgement of similarity' (p. 10). Bühler's ideas began with rules for signal and sign function, and culminated in the now-famous organon 'model' of language with portraying, appellational, and expressive functions. These functions vary in their dominance with the corresponding dominance of situation, sender, or receiver. The theory finally employs the two constituent 'fields' of reference (referent field = anaphoric) and symbolization (symbol field = naming) to describe the communicative linguistic structures. Other studies by Bühler are listed in the bibliography. Further discussions of psychological language theory were formulated by others such as Deutschbein (1918). In France, psychological influence reveals itself in the instance of Saussure's thought (cf. 4.2(1) below) being continued, with emphasis on its psychological components, by Damourette and Pichon (1947). A relationship between language and thought is also encountered in Sechehaye (1926, 1927); Brunot (1958); Guillaume (1964); Bally (1926).

3.2 *Sociology*

Another extralinguistic source for ideas about linguistic theories has been and is linguistic sociology. The major concern of this discipline is inquiry into the function of language in the framework of internal and external linguistic traffic of the language

community. If one looks back at the period under discussion, he is able to confirm that a sociological perspective capable of organizing linguistic reflections into a system was lacking at that time even as it is lacking in the Europe of today. In its general theoretical orientation, linguistics proper misses even now the fruitful cooperation necessary for progress in this expansive arena.

It remains remarkable, however, that sociologically oriented systems are found since 1900 throughout even that linguistic literature which remains entirely within the confines of linguistics intended only as linguistics. It is clear in the case of Saussure (1916) as it is in that of Ammann (1925), and others. One might say that they began to be aware of the communal dependence of language. A second new direction is the concern with the normalized character of language. Here as elsewhere, there are so many individual observations and findings as to require the vehicle of a full intellectual history of linguistics for their adequate exposition. It is appropriate to note that sociological components of the Saussurian position were further developed in France by Vendryes (1921a-b) and Bally (1926). For them linguistic style appears as the identity of a group. In the history of language change, the social substratum effects the assignment of norms. An exhaustive representation of the linguistic situation of that time is given by Sommerfelt (1938), while Vossler (1923b) sets out to define the boundaries of linguistic sociology. For insight into what became of these sociological reflections, it is necessary to turn to Segerstedt's *Die Macht des Wortes* (1947).

Segerstedt begins with the premise that language is one social phenomenon among others and 'that language is a social function — that is, specialized speech is determined by social factors and can be rendered a real medium of communication only through them. Language is moreover also social in the sense that it is necessary for all highly developed forms of societal life' (p. 15). The distinction between sense (*Sinn*) and symbol is important because 'a word can be assigned no *sense* if it is not first insertable into a general situation. It is not on the level of symbol unless it refers to a system of societal norms which partially bind it to that general situation' (p. 57). More precisely, a graduated hierarchy is constructed from meaning through function to symbol. The effective societal communications are accomplished through symbols; these symbols affirm the function of language as group interaction. This book represents in a good summary and overview the many individual observations by other authors briefly mentioned above. It can also stand for a movement that has since been subject to further growth.

4. THEORETICAL APPROACHES FROM LINGUISTICS

These approaches were partially EXPLICIT in the sense of our preliminary distinction — that is, they were conceived and written about as separate themes as in the publications of L. Hjelmslev (1943) and several German authors. However, other theories were IMPLICIT to the extent that they appeared only in the context of differently oriented

theses. This could be more exactly indicated only in a detailed history of science and methodology. For the purposes of this survey, we shall divide the production into non-German and German. The thought systems of the thirties comprise a surveyable complex which has manifested itself in the wider impression made by developments in language science. Furthermore, the distinctly German dimensions of the complex are seen to be detachable for examination.

It has already been maintained that advances in linguistics, beginning at the latest after the ascent of phonology and after permeation by Saussurian viewpoints (as they were conceived before the fundamental research of Godel), attained their prominence almost exclusively outside Germany. This situation became more and more pronounced through the first half of the century; the decline corresponded to the rise of the four pivotal schools of Prague, Geneva, Copenhagen, and London. In retrospect, the schools are seen to have been the four principal components in the newer tradition of European language science. The general components of Humboldtian linguistics with their consequences for European language typology (Steinthal, Misteli, Finck, Lewy, Lohmann) and with their conscious revival as neo-Humboldtianism (Weisgerber) have belonged to this tradition since its inception. We shall seek to characterize the above-mentioned four directions by means of an inventory of their outlooks.

4.1 *The Prague School*

Through important publications on analysis and understanding of language systems, the Prague School came to be of high value to the field. This value was documented in the many contributions of its members. These appeared not only in the *Travaux du Cercle Linguistique de Prague* but also as monographs by such scholars as Vachek and Jakobson. In the way of a general characterization that highlights the major features, there are three points of view that particularly distinguish the Prague School:

1. *Concerning language*: *system* vs. *manifestation*, *langue* vs. *parole*, *synchrony* vs. *diachrony*.

In the opinion of the Prague linguists such as Vachek:

> Saussure appears to have been unable to reconcile the systemic character of langue with the changes to which langue is exposed ... and which become manifested in parole ... Saussure never worked out a theory of parole (Vachek 1966:20; cf. also Skalička 1964:375). ... the system of language is always striving after some kind of balance of its elements. By this balance is meant the order to which all elements of the system are subjected (Vachek 1966:21). As language goes on developing uninterruptedly, ... some structural defects are always present in the system, ... its system is never absolutely balanced (Vachek 1966:26). Synchrony should not be identified with statics; ... even in the synchronistically studied period ... one is not dealing with static, absolutely homogeneous materials (Vachek 1966:27). It is the emphasis laid by the Prague group on the inner tension found in a system of language ... that makes a significant contribution by this group (Vachek 1966:32).

2. *Concerning phonology*:

There developed a 'radical separation of phonology from phonetics in the early years of the Prague School ... Trubetzkoy even went so far as to classify phonetics as a "mere" natural science, auxiliary to linguistics, while phonology was ... a part of linguistics' (Vachek 1966:19). On phonology, cf. Trubetzkoy (1931), Vachek (1964), Jakobson (1931), Bühler (1931). The rejection of phonetic qualities is particularly obvious in Trubetzkoy's proposal of a morphophonology (Trubetzkoy 1929): Trubetzkoy employs the terminology of M. H. Ulaszyn in a different manner to designate 'les idées, complexes, de deux ou plusieurs phonèmes susceptibles, en fonction des conditions de structure morphologique du mot, de se remplacer l'un l'autre au sein d'un seul et même morpheme', as for example *k* and *č* in Russian.

3. *Concerning semantics*:

According to the Prague conception language is not a self-contained whole, hermetically separated from the extralingual reality, but, in fact, its main function is to react to and refer to this reality ... it was Mathesius' conception of language which lay at the basis of the functionalist approach: by stressing the virtual identity of the facts to be expressed by all languages of the world and by directing the analyst's attention to the diversity of ways by which these identical facts are referred to in various languages, Mathesius ... emphasized what was to become the specific difference of the Prague structuralistic conception, and what was to clearly delimit that conception from other structurally oriented linguistic currents, such as those of the Danish glossematic school ... (Vachek 1966:7; cf. Mathesius 1926 and 1931).

In relation to other streams and taken on its own merit, the Prague School represented a direction which attracted much respect in all parts of Europe — many outside the German-speaking area — where the newer linguistics was pursued. The approach advocated was a definite one. If it is not misleading to characterize the Geneva School as treatment of the systems of language, the Prague School may perhaps be described as dealing with the differentiation of the system conception in its subsystems and its diachronic aspect.

4.2 *The Geneva School*

As a consequence of the ideas of Saussure, which have proved to mark the beginning of a new period for research in language, two authors in France became especially prominent: Lucien Tesnière and Gustave Guillaume. Both started with the systematic character of language, portrayed this character and interpreted it in the interest of clarification. The interesting aspect of this position is that Tesnière's view falls in present opinion into the area of a modern dependency-grammar (Baumgärtner 1965). Tesnière's *théorie de la translation* is prophetic of today's transformational grammar and is found in nucleus in Bally's *transposition* (Garret-Worthington 1968). Significant also is Tesnière's employment of Humboldt; his treatise dared to approach pure linguistics. In contrast, Guillaume's functional representation of tense, time

and verb categories (cf. Schogt 1965) shows similarities to German content analysis research to be discussed below.

In French language research, one can also very often detect a not quite explicit but nevertheless recognizable continuance of Saussurian conceptions; these are evident in the general works of Kukenheim (1962), Jordan (1962, Chap. IV), Levy (1963), Benveniste (1963), Leroy (1963), Bolelli (1965), Degtereva (1964). It appears even in Italian research (Bonfante 1947), and in Spain (Menéndez-Pidal 1955). In French-speaking Europe, de Saussure received approximately this kind of reception: codification and interpretation were undertaken, psychological and sociological components were pursued and distinguished by several authors not including Bally. An analogical transference of the theory of other disciplines appeared: Bally applied it to stylistics; Meillet and Benveniste to historically comparative linguistics. The influence of the Geneva School remains great in French and German Romanistics: for example, the studies of Martinet enjoy considerable effect. An exception is Italy, where acceptance of Genevan suggestions was reluctant, requiring even more time than in Germany. Only in most recent years has this reluctance been overcome.

Under 'theoretical approaches', we may consider:

1. *The system and manifestation of language.*

De Saussure's *Cours de la linguistique générale* in its unabridged form (1945) was, until the studies of Godel (1957), the work by which the influence of this man was measured. In this book, the most pronounced approach is the claim that language manifests in its phenomena a system of constants which must somehow be thematicized if one hopes to grasp language in its own terms. Oppositions appear as a means to analysis and description of invariables which are nevertheless not identical with the real characteristics of language. It is the discrete entities which implement the functioning of languages. Aside from this, a system analysis requires a different approach from that of a derivation or history of systems — therefore the emphasis of the synchronic treatment of linguistic facts. There is a striking new terminology introduced into the discussion by de Saussure, for example, *objet de la linguistique, chaîne parlée, signifié* vs. *signifiant, synchronique* vs. *diachronique, entités concrètes de la langue, identités, réalités, valeur, rapport, entités abstraites, traditionel* vs. *rationnel, alternance,* and so on. One recognizes here the clear passing over into a science of language in which the role of 'category' necessarily becomes integral to analysis and description (cf. Isačenko 1934).

2. *Phonology.*

Although the *Cours* contains its own theory of syllables, the passages entitled 'phonology' do not play a leading role. The reason is that there was not yet any strict phonological conception as that worked out largely by the Prague School. Attention is already given to the phoneme: 'Après avoir analysé un nombre suffisant de chaînes parlées appartenant à diverses langues, on arrive à connaître et à classer les éléments avec lesquels elles opèrent; on constate alors que, si l'on néglige des nuances acous-

tiquement indifférentes, le nombre des espèces données n'est pas indéfini' (Saussure 1916:66).

3. *Semantics.*

Here two leading concerns have become important: first, sign theory (*Zeichentheorie*) and second, the beginning of a synchronic analysis of meaning. Two general principles were: arbitrariness, that means the fact of an 'unnatural' arrangement of *signifiant* and *signifié*, and the linearity imputed to the *signifiant*. This leads to a linear description of nonlinear complexes of meaning (*signifié*-constellations). Synchronic semantics consisted for de Saussure in the analysis of *rapports* and *oppositions* between components of the lexicon; here, the paradigmatic feature of the *langue*-conception enters in: which possibilities and differences of reference are present in an ensemble of semantic units. The crucial center of the analysis of actual systems is *la valeur du signe*, whereby the reference reveals itself from out of the simultaneous presence of other references (Saussure 1916:159).

4. *Language history.*

While one may say of de Saussure that he developed no *linguistique de la parole* (Vachek 1964:375), there are in fact extensive remarks about a *linguistique diachronique* in his writings. These, however, seem hardly to be taken seriously in comparison to the other synchronically-oriented facets of his theory. How fruitful the synchronic suggestions have become and what has been made of them is a topic worthy of pursuit for its own sake (Benveniste 1963).

It is curious that a relatively orthodox school based on the Geneva model cannot be identified in France, despite very frequent use of the name. Instead, individual authors write from a base of a rich methodological panorama: Charles Bally (1932), Antoine Meillet (1921), André Martinet (1960). The latter proposes his own structuralist approach in a systematic way, and selects parts of it such as phonology and functional linguistic analysis for closer and more lengthy examination (Martinet 1933, 1962). In the earlier years of the time in question, Karl Vossler was an advocate of an 'idealistic school' (Jordan 1962:Chap. II) which was strongly reminiscent of Benedetto Croce's expressionist aesthetic (Croce 1945). If we look at unified disciplines instead of unifying national borders, then von Wartburg would also belong here on the strength of his professional heritage; he, like other Romanists (for instance, Baldinger), has also produced works on language theory (von Wartburg 1931, 1962). Influence reaching as far as Austria can be recognized in the works of Moritz Regula (1935).

4.3 *The Copenhagen School*

If we wish to distinguish in our basic exposition of the development of linguistic theory between DEGREES OF THEORETICAL ABSTRACTION, we would have to assign to the Copenhagen School the highest degree of any movement sketched here. The Trubetzkoy-

related course of thinking in Prague and the even more advanced statements of de Saussure show a definite avant-garde character; they were atypical additions and constituted a pioneer situation. They were moreover gradually built upon their own original premises. In contrast, the Copenhagen movement begins at a level that is already higher in abstraction: fundamental objections to systematization, basic acceptance of the structural propensity of language, finer distinctions of subsystems and questions of hierarchal character had already been presented and dealt with. The scientific foundation had already become so broken up that one was free to commit himself to areas with more fruitful promise.

The specifically new direction revealed itself in the initial intention for a formal scheme of linguistic description. This intention is intimately bound up with the name of the principal representative of the Copenhagen School: Louis Hjelmslev. His *Prolegomena* (1943) may be called the single most theoretical work of the epoch. The Copenhagen treatises have received correspondingly more attention: Spang-Hanssen (1963), Siertsema (1955), Uldall (1957), Malmberg (1966). The school presents its own position in the writings of Hjelmslev (1928, 1936, and especially 1943). In connection with this northern center of theoretical linguistic activity, the names of investigators like Viggo Brøndal must be recorded. He advanced an unusual position in that he was inclined more toward the categorical conception of linguistic description. He strove, therefore, for a semantics oriented toward conceptual combinations. For more exact information, see Spang-Hanssen (1963:128); Malmberg (1966:229); Fischer-Jørgensen (1949).

The sublimity of abstraction that is characteristic of the Copenhagen School is especially evident when one realizes that the major perspectives on linguistic theory are already being discussed and modified in Copenhagen in a highly differentiated way. One recognizes the refining of the conceptual apparatus and the wide divergence from phenomenological premises. The following citations are revealing in this regard.

1. *On semantics and phonology*:

In Hjelmslev's opinion, linguistics must in order to be immanent establish a science of the expression 'without having recourse to phonetic or phenomenological premises' and a science of the content 'without ontological or phenomenological premises ...' (*Prolegomena* 50) (Spang-Hanssen 1963:134).

La vieille idée d'un système phonétique universel est donc pour Hjelmslev aussi impossible que la réalisation, déjà tentée par la philosophie médiévale, d'un système universel des concepts (Malmberg 1966:223).

Thus, Saussure would have it that the sounds ... should be described, not primarily in terms of phonetics ..., but in terms of mutual relations only, and, similarly, the units of the linguistic content ... not in terms of semantics but in terms of mutual relations only (Hjelmslev 1947:75).

This is, e.g., the way in which Saussure 's ideas came to be utilized ... by the Prague school of phonology, where the phoneme is a phonetic abstraction, but definitely a phonetic one, and radically different from what, to my mind, Saussure's phoneme must have been (Hjelmslev 1947:73).

2 *On system and manifestation:*

Une théorie linguistique ... doit chercher à trouver, derrière fluctuations et changements ..., une constante qui ne soit pas ancrée dans une 'réalité' extérieure à la langue ... La linguistique doit viser à déterminer ce qui est caractéristique et commun à toutes les langues ... et ce qui ... fait qu'une langue est identique à elle-même dans ses manifestations ... Hjelmslev estime que la recherche de cette constante ne manquera de buter contre la résistance de la tradition humaniste, laquelle a priori nie l'existence d'une constante, puisque pour elle les phénomènes relevant de l'humain ne se produisent qu'une fois (Malmberg 1966:208).

The conception of language as a purely relational structure, as a pattern, as opposed to the usage (phonetic, semantic etc.) in which this pattern is accidentally manifested (Hjelmslev 1947:3).

The main thing is not the sounds, characters, and meanings as such, but their mutual relations within the chain of speech and within the paradigms of grammar. These relations make up the system of a language, and it is this interior system which is characteristic of one language as opposed to other languages, whereas the representation by sounds, characters, and meanings is irrelevant to the system and may be changed without affecting the system (Hjelmslev 1947:69).

... five fundamental features which, according to my definition, are involved in the basic structure of any language ...: 1. A language consists of a content and an expression. 2. A language consists of a succession, or a text, and a system. 3. Content and expression are bound up with each other through commutation. 4. There are certain definite relations within the succession and ... the system. 5. There is no one-to-one correspondence between content and expression, but the signs are decomposable in minor components ... (Hjelmslev 1947:77).

Two characteristics of the work of this school are particularly worthy of notice: first, the striving for as FORMAL a theory as possible and second, the relatively minimal effort to utilize accessible linguistic phenomena. The former characteristic imputes to the writers a position that places them a considerable distance away from other linguists of their time. The reason is their outspoken desire for mathematical precision of definition and systematization. The other schools of thought were neither willing nor able to proceed in such a way as to cut themselves off from their inductive basis of experience. From another perspective, however, this signifies that the Copenhagen movement already belongs to a mode of linguistic work which was to come into universally favorable repute only after the Second World War. This modus was a decisive approach with the clear aim of reaching in the theoretical context a formal arrangement of linguistic data (forms of description). In hindsight, we can accord this movement a more just appraisal than it received in the thirties. It seemed in those years to represent an extreme possibility of theoretical rarification; it was temporarily laid to rest because its applicability was difficult to discern. Nevertheless, attempts in this direction were not entirely absent: the best known is offered by Togeby (1951), and a later one is put forward by Harweg (1964). It would disturb the continuity of this overview to pursue the individual modifications which naturally occurred in the course of active years of inquiry even in this circle. Important fundamental conceptions which now figure in every linguistic analysis were either introduced in the circle or first admitted in theoretical form into the methodology: *expression*

plane vs. *content plane*, *syntagmatic* vs. *paradigmatic*, *system* vs. *text*, *analysis*, *function*, *catalysis*, *schema*, *variants* (cf. Hjelmslev 1943).

4.4 *The London School*

The fourth movement that developed outside the central European area goes back to J.R. Firth. Its importance was its commitment to soberly objective assessment of available Continental theories. Its own theoretical product can be selectively cited from the portrait by Robins (1963):

1. *System, structure*:

The function or meaning of an element is then stated as its syntagmatic relations with the other components of the structure in which it belongs, and its paradigmatic relations with the other commutable elements. ... Structures are the primary dimension, as more directly abstracted from the actual material of utterance; systems are set up subsequently to account for the different paradigmatic possibilities at places in structures. ... Firth laid more stress on the differences between different particular systems than on the generality of general systems; in this sense his analysis can be characterized as polysystemic (Robins 1963:20).

2. *On phonology*:

Firth was responsible for introducing the new system of prosodic analysis and breaking with the phoneme concept as basic to phonology (Robins 1963:23; with reference to prosodic analysis, see Langendoen 1968:5).

3. *On semantics*:

Meaning is best understood not as a dyadic relation between word and referent ... but rather as a function performed ... by an utterance (Robins 1963:14).

It is interesting to compare Malinowski's rejection of 'ideas' as the explanation of meaning and his interpretation of it as a function, and his view of language as part of social action, with the rather similar treatment of language and meaning ... in the work of Wittgenstein (Robins 1963:16).

For Firth also, meaning is the principal inquiry for linguistics, because

language, in Firth's theory is all meaningful activity, all language study is the study of meaning, and linguistic analysis consists of the analysis of different types of linguistic meaning (Robins 1963:17).

Semantics is not the study of speech in contexts of situations of the Malinowskian type but rather of speech in typical contexts, ... semantics is properly the study of those speech styles which are appropriate to special social roles that individuals play (Langendoen 1968:45).

Meaning is function in a context, whether the extra-linguistic context of situation or the intra-linguistic contexts of grammar, phonology, or other subsidiary levels (Robins 1963:19).

4. *Analysis, description*:

Firth's attitude to the status of the elements of linguistic analysis set him on the side of the 'hocus-pocus' linguists as against 'God's truth' linguists who regard structures and their elements as in some way present in the language independently of the linguist's analysis (Robins 1963:22).

(A more extensive treatment of linguistic analysis of the London persuasion appears in Firth 1947, 1957.)

With works of this kind, one has already reached both the end-point of the period and the periphery of the geographic area in question. Thoughts about language theory were not widely discussed on the Continent until after the time immediately following their genesis; consequently they could not exercise any real influence there. That they nevertheless constitute an interesting and inherent unity is a tribute to their originality and their full development. Insofar as it is legitimate to ascribe a certain fluidity to scientific observations about language, one can speak with reference to these authors of a measured circumspection of the kind in effect when one is inclined to compare the findings of other sides (nations) and to evaluate their usefulness and plausibility.

It has previously been stated that the four approaches under review represent the four principal directions in which linguistics has proceeded since about 1930. They can be regarded collectively as steps in the development and dissemination of a structuralist linguistics with a correspondingly oriented theory of language to act as support. The connecting link between philosophy and theory is in all four cases the unqualified role and valence of the system as opposed to the surface manifestation of the language, the recognition and analysis of manifest structures, the amenity of individual structures to insertion into the total system of the particular language and, finally, acceptance of the fact of universal features of all languages. These common elements comprised the REFERENTS of the special theories of different individuals or schools. It is obvious that concepts of grammar grow out of every school and provide the communicative medium for the school's basic position.

4.5 *Excursus: Anton Reichling's Position*

Although an overview of the theoretical map as it was during the twenties and thirties can highlight and describe the intensity and effectuality of scientific activities in terms of a global impression, there seems to be upon more thorough examination a naturally more differentiated and, one might say, typically European topology. In almost all countries, individual investigators who are at home in a systematic linguistic cosmos may be found and classified as to their particular persuasion. The work of Anton Reichling will serve as an example for a limited discussion. His accomplishment is

proof that serious and progressive thought did already find a place outside geographic centers in the first third of this century. It is characteristic for Reichling that he, like many researchers of Dutch origin and speech, showed the typical European knowledge of different schools of linguistics, even if he did not very often or very prominently enter into discussions. He can stand at the head of a list of outstanding names, among them Uhlenbeck, Van Ginneken, and others. Reichling's *Het woord* (1935) became and remained important, not only because the writer retained and furthered in an independent way many of de Saussure's thoughts, but also and principally because he attempted to establish for linguistic semantics the broadest possible foundation. For him, this meant that philosophical theories of meaning had also to be taken into account. The approach is vulnerable to criticism at the point where it departs still further from its broad foundation. In this traditional, almost scholastically inclined base of authority lies the reason why Reichling can no longer fully accept technical-technological directions like that of generative grammar (Reichling 1961). Despite its lack of connection with more recent developments, *Het woord* is still highly respected as a contribution to the 'study of language and linguistic usage' which sets out to penetrate the rules which control linguistic happenings. The point of approach in the work is the word. Consequently, what developed was a word-oriented semantics which treated the unity of meaning, of concept, word and thought, meaning and context, but which arrived at no syntactically oriented semantics. This then became the limit beyond which further advances began to enter or, with the aid of Wittgenstein's approach, are still to be found.

4.6 *Theoretical Approaches in Germany*

Roughly speaking, three points of view were advanced and received a hearing in interwar Germany. The first was application of Saussurian thought to semantics, with observations on the structural nature of the lexeme-level (so-called word-field study); this was promoted by G. Ipsen (1930a) and especially by J. Trier (1931). The second was epistemological interpretation of lexicological data and its relevance to the so-called mother tongue; this was partly a conscious return to Humboldt (1836). The third was the integration of these data into a conceptual framework, into a content-oriented language science; this was explicated after the Second World War primarily by Weisgerber.

The overwhelming impression made by this persuasion is one of an almost exclusive emphasis on word-meaning — its change in the course of history, its interdependence with other meanings and their collective role in the imparting of knowledge. A technical linguistic component such as that for the construction of sentences hardly entered the discussion.

The first of the enumerated movements, the word-field theory, was derived from an

application of the Saussurian doctrine of the oppositions inherent in a complex of sign-values. Groups of lexemes were recognized in the lexicon — these came to be regarded as subsystems or SEMANTIC PARADIGMS. The lexicon was no longer an unpatterned alphabetical wordlist; rather, it came to be seen as meaningfully intelligible by virtue of the infrastructure of affinity, interchangeability and demarcation which operates within the unity of the lexical inventory. This infrastructure can be detected in the language — that is, in the meanings. For practical purposes, the definite presence of a *langue* was perceived in the lexicon. The theoretical conception in back of this view was that of de Saussure: it centered around the conviction of a system in linguistic manifestations and so around the susceptibility to structuring of linguistic usages.

For people like Weisgerber, emphasis on the role of the mother tongue was inspired by linguistic-political interaction in the German-French border areas before and after the First World War. It was particularly stressed in works that identified the learning of a language with the growth in conceptual and intellectual consciousness, that linked linguistic mastery to intellectual consequences (Weisgerber 1929). The origins for this approach were already extant in the nineteenth century in the viewpoints of Humboldt concerned with the effect of linguistic variations on the modes of intellectual experience (Humboldt 1836). With this emphasis in mind, one can justifiably speak of a neo-Humboldtianism. The theoretical implications for this movement also were not original but taken over from other sources. Adapting de Saussure's fundamental ideas about oppositions in the linguistic system, neo-Humboldtianism arrived finally at its own variety of linguistics, namely at the so-called content-oriented grammar (that is, linguistic description). The principal theoretical idea concludes with the demand that the acquired and always viable system in a language be recognized, taken seriously, described, and evaluated for its 'accomplishment in the management of the world'. The factor in this demand most difficult to accept was the 'linguistic middle-world', the self-sufficiency of language. The general similarity to the later reflections of Sapir and Whorf is noticeable.

As the last-named Sapir-Whorf hypothesis demonstrates, viewpoints of this kind are in no sense limited to Germany. But they afforded to the somewhat more generally oriented German *Sprachwissenschaft* the appearance of a predominant and no longer relevantly concrete partiality. One possible reason for such an impression is the fact that promoters of this movement were in truth among the few who dealt with broader problems, even if their relationship to the dominant historically comparative approach was in practice marginal. Another possible reason is that an up-to-date, theoretical sublimation of their strongly intentional fundament did not ensue. How limited they were and how little their approach could substitute for the failed attachment to previously mentioned international developments became emphatically clear after the end of the Second World War. It required until the sixties to bridge the large gap. Only at the present time are German scholars prepared to tolerate a new form of linguistics which is of universal interest and is winning both converts and respect.

5. SUMMARY

The purpose of this essay has been to introduce West European linguistic philosophy and theory of the nineteen-twenties and thirties. A separation of the philosophy of language and language theory seemed not only thematically but intentionally justified. Two different motivations underlie the two areas of interest and scientific curiosity. Linguistic philosophy has consisted of and continues to exist in philosophical writers dealing with language in a general way according to their persuasion or their school. The theory of language, on the other hand, is developed by authors who, as linguists, fashion ideas of structures common to all languages. In the philosophy of language, presuppositions about language play a leading role, while in language theory, describable structures or universals are dominant. That the borders between the two emphases are not always sharp is obvious from the material and motivational preconditions.

Both emphases failed to aspire in the discussed period to the degree of formalized knowledge which would be minimally acceptable at the present time. It is necessary however to make one clear distinction: linguistic philosophy does not in truth aspire to such a high degree of formality, since it conceives itself as the study of characteristics common to all phenomena and therefore also to language. In general, it attempts a Platonic cosmos of introspection and reflective examination. Language theory, on the other hand, rests on the foundation of the linguist's interest in language and is consequently much more analytically and systematically oriented. Of course, both movements display, especially toward the end of our examined epoch, strong tendencies in favor of formalized conclusions about language. In philosophy, these tendencies were prepared by the works of Husserl and Frege and advanced by members of the Vienna circle; in the case of theory, they were prepared by de Saussure and advanced by the chief originator of glossematics, L. Hjelmslev (cf. Lamb 1966). In both cases, this sublimation with regard to the means to knowledge and its description was in the main carried out and standardized outside the German-speaking central region.

The first third of the twentieth century constitutes an important and even decisive period of continuing development and becomes, like all transitional times, interesting as a bridge to still further developments. If one considers all previous history of linguistics as falling into naturally divided characteristic periods, there were formed in nineteenth century Europe the two major streams of thought still evident today as channels for interest and investigation: the philosophical-general movement was added to this flow, while philosophy began to occupy itself with a differentiated treatment of the problem of meanings in language. Both philosophy and science now attempt to regard language in its own terms, whereby philosophers restrict themselves more to special questions about language, while linguists move more in the direction of a more scientific methodical inquiry.

For Western Europe and for analogous work in Eastern Europe, the first four decades produced in language theory an attitude toward acquisition of knowledge

which is at once divided and unified. The theoretical construction as such envisioned by L. Hjelmslev is not yet realized. One could express it in this way: the orientation of the linguistics of the period is almost exclusively objective, which, according to inductive science, is legitimate and plausible. Characteristic also is Hjelmslev's position with its insistence that deductive linguistics (qua method and theory) and inductive linguistics (qua material contingency) are one and the same complex. The truly new epoch that begins in the fifties transfers the accent to construction of theory and method, establishing in the process a balance between objectivity and theory. Even so, the earlier period need not be dismissed as simply independent of theories; it demonstrates, on the contrary, what a crucial role nonrational fundamentals can play.

One may say in closing that the foregoing sketch in its brevity can only be general and so cannot in the end impart any special knowledge. One may add, however, that just such generalizations often convey the feel of a period — that is, they may accurately communicate the *communis opinio* of an epoch. If upon penetration of the heart of the arguments differentiated in the work of the authors from the fields of philosophy of language and linguistic theory cited here one finds insights into either matters of detail or overall relationships, then the foregoing characterization, a guide to an epoch clearly set off against others, should have a value of its own.

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GENERAL DIACHRONIC LINGUISTICS

YAKOV MALKIEL

I

It hardly takes any unusual familiarity with today's linguistic scene and climate of opinion to realize that, ever since the mid-twenties, when the implications of the neat cleavage between synchrony and diachrony began to 'sink in', the former has been advancing at a far brisker pace than the latter. Several cogent reasons for this disparity in the rate of progress have been adduced by keen observers, but one factor has been insufficiently stressed: the scarcity of stimulating and authoritative guides to diachronic analysis at its — topically — least confined.*

To be sure, a dozen or so imaginative language historians and insightful comparative grammarians (and etymologists) have tried to transcend mere competence and even mastership in a tidily delimited domain, as demonstrated by the discovery of new philological sources, by the clarification of details, by the writing of monographs conventionally documented, phrased, and argued, and by the compilation of dependable reference works, skillful introductory textbooks, and balanced manuals. They have as boldly experimented with new genetic ideas — theoretical concepts, methods of inquiry, techniques of presentation — as have their counterparts in the ranks of descriptivists, and their independence and originality have been widely praised. In practice, however, specialization and fragmentation of historical knowledge has assumed such proportions that it has become humanly impossible even for devoted, talented far-above-average experts to keep abreast of rapidly expanding knowledge in all fields contiguous to their own. Aside from the sheer vastness of the available corpus of information it has also proved intrinsically far more difficult to carve out or distill from the record any 'pure linguistics', divested of its philological and literary teguments, than it has been for descriptivists to free their material from its folkloristic or ethnographic or sociological shell.

One of Antoine Meillet's master strokes, over half a century ago, was to have insisted that all contributions to the bulletin of the society whose course he was so resolutely steering, and in particular all book reviews, be so circumscribed and worded as to be readily understandable to any qualified reader and not just to the handful of

* As on earlier occasions, Marilyn May Vihman has been the first reader of my manuscript, and it is a pleasure to acknowledge her help in smoothing out the wording of numerous passages.

narrow fellow specialists. Such an elastic policy, at that particular juncture, offered a major advantage over the more heavy-handed approach of Central European *détaillistes*. Were a new Meillet to strike out today, under the current aggravated conditions of work, he would surely adopt even sterner measures to prevent diachronic linguistics from turning into a stretch of unappealing, treacherous swampland in which overconfident workers are apt to bog down. It should be, ideally, both the privilege and the responsibility of every 'diachronist', in the opening and the concluding paragraphs of his monograph (to say nothing of abstracts) as well as in every formal review and informal appraisal, to assess the potential value of the findings at issue not only for advanced research in the specific language or language family ostensibly involved — be it Vegliote or Ossetic or Nilotic — but for the total edifice of genetic linguistics.[1]

Such a systematic interweaving of loosely floating threads of knowledge has not, it would seem, been systematically undertaken on either side of the Atlantic in the last thirty years or so — and we are, conceivably, farther removed at present from this perfectly realistic ideal than at any earlier point in recent history, on account of the faulty retrieval, storage, and transmission of the many valuable insights ceaselessly acquired. To be sure, there exist, now as before, occasional panoramic (i.e., cross-linguistic) presentations of chosen processes. In the hands of an inspired expert like J. Kuryłowicz bold projections of, say, the workings of analogy or of certain newly defined analyses (e.g., of 'internal reconstruction') can yield very challenging treatments.[2] But this sweep has remained the exception rather than the rule, and the roots of the difficulty are to be found in pre-1920 linguistics.

The start of organized linguistics was propitious enough, so far as the degree of generality is concerned, with W. von Humboldt's genetically underpinned audacious

[1] If the authors of books and articles are unable to achieve this goal, the responsibility devolves upon the writers of all manner of Progress Reports, 'Forschungsberichte', and 'Où en sont les études ...?'-type digests. In this respect I have found little in present-day Europe that matches the quality of the older volumes of *IdgJb* or *RLR*, or, to take American research as a frame of reference, the section on "Language" in the six volumes, covering the period 1959–69, of B.J. Siegel's *Biennial Review of Anthropology* (Stanford University Press). In several critical reactions to recent volumes of that otherwise excellent British venture, the *YWMLS*, I have voiced my regret about the editors' inability or unwillingness to prefix to the individual annual surveys of research in national languages and literatures two broader, cross-cultural chapters, each offering a critique of general, methodological trends in linguistic and literary inquiries.

[2] Kuryłowicz's famous article "La nature des procès dits 'analogiques'", noted for its incisive and beautifully worded conclusion, was written in 1947 and appeared in *AL* 5.15–37 (1945–49). An equally celebrated piece of more recent vintage is his report (with the summary of a lively discussion appended to it) to the Ninth International Congress of Linguists (1962): "On the methods of internal reconstruction" (see *Proceedings* 9–36). An early specimen of that scholar's catholicity of interests — but one of greater relevance for synchronic than for diachronic research — is the paper "Dérivation lexicale et dérivation syntaxique (contribution à la théorie des parties du discours)", *BSL* 37.79–92 (1936). More controversial — indeed, rather severely criticized by numerous reviewers — has been the Polish scholar's recent idiosyncratic approach to "The notion of morpho(pho)neme", in *Directions for historical linguistics: A symposium* 65–81 (eds. W.P. Lehmann and Y. Malkiel; Austin and London [1969]).

typological explorations setting the standard for a century and a half (*Über den Dualis*, 1828; *Verwandtschaft der Ortsadverbien mit dem Pronomen*, 1830). But as the volume of information increased by leaps and bounds, entailing the need for austere specialization in any source-oriented research, and as the increasing rigor of Indo-European studies made them both a powerful magnet and, within the scope of comparatism, an almost self-contained field, the search for universals slackened. Even scholars endowed with an uncanny power of synthesis, such as Karl Brugmann (1849–1919), would use that capability for erecting an imposing edifice of knowledge within their neatly delimited subdiscipline, with relatively little attention to liaison; witness such writings of Brugmann's — apart from his *Griechische Grammatik* and his share in the monumental *Grundriss* — as *Die Bildung der Zehner und der Hunderte in den indogermanischen Sprachen* (Leipzig, 1890); *Die Ausdrücke für den Begriff der Totalität in den indogermanischen Sprachen — eine semasiologisch-etymologische Untersuchung* (Leipzig, 1894); *Die Demonstrativpronomina der indogermanischen Sprachen* (Leipzig, 1904); *Die distributiven und kollektiven Numeralia der indogermanischen Sprachen* (Leipzig, 1907); *Zu den Wörtern für 'heute', 'gestern', und 'morgen' in den indogermanischen Sprachen* (Leipzig, 1917); the posthumous monograph, *Die Syntax des einfachen Satzes im Indogermanischen* (Berlin and Leipzig, 1925), and many more pieces similarly labeled and delimited.[3] Even where the title of a short article or a note is wide-ranging and noncommittal as to the documentary evidence pressed into service, closer inspection invariably shows a Brugmann immersed in paleo-I-E languages, with occasional side-glances at their more modern stages; cf. "Das Genus der Deminutivendungen", *IF* 19.215–6 (1906); "Zur haplologischen Wortkürzung", *ibid.* 21.367–8 (1907); "Abkürzung im sprachlichen Ausdruck, ihre Anlässe und ihre Grenze", *ibid.* 32.368–72 (1913); "Gleichklangvermeidung in der lautgesetzlichen Entwicklung und in der Wortbildung", *ibid.* 38.117–28 (1917–20), and a very few more.[4] Brugmann's attitude and his budgeting of time, energy, and enthusiasm was by no means atypical of his period and environment; W. Meyer-Lübke strove after similar aims in comparative Romance, C. Brockelmann — whose expertise was not limited to linguistics — chimed in as a Semitist, and only a long-isolated outsider and

[3] As a brief topical guide to Brugmann's researches one may use the pertinent section of the Index, spanning forty years, in *IF* 40.295–297 (1922).

[4] In trying to infer the degrees of breadth or narrowness from titles of books and articles one must at all times remember that in the past many such titles were deceptively general, because the scope of the monograph series or of the periodical in question implicitly supplied the requisite qualifications. Thus, if a journal like the *ZRPh* published a study titled, say, "Zur $\bar{u} > \ddot{u}$ Frage", it was contextually clear that only Latin $\bar{u}$ and Romance (or French) $\ddot{u}$ could be meant. In other instances, however, authors would transcend, sometimes by a wide margin, the expected minimum scope of commitment; this is true, e.g., of E. Richter's paper — dedicated to P. Kretschmer — "Zur Syntax der Inschriften und Aufschriften", *VR* 2.104–35 (1937). It was, above all, the new wave of concern with universals, plus the spectacular rise of journals devoted to an unrestricted range of languages, like the *BSL*, that gradually made it mandatory, for authors and editors alike, to supply unambiguous, accurately circumscribed titles. A well-chosen set of title and subtitle sometimes makes an abstract supererogatory.

dissenter of H. Schuchardt's caliber would be tempted to upset the accepted hierarchy of values.[5]

[5] The classic pattern of intellectual growth is rather neatly exemplified by C. Brockelmann (1868–1956) who — quite apart from having delved into straight history and history of literature — started out by revising A. Socin's *Arabische Grammatik* and by preparing, on his own, a grammar of Syriac with chrestomathy and glossary (1899), from there advanced to an early comparative bird's-eye view, in semitechnical presentation (Sammlung Göschen, No. 291; Leipzig, 1906), which qualified for translation into French (1910), then offered the core of his grammatical edifice, almost simultaneously, in a more detailed form: *Grundriss der vergleichenden Grammatik der semitischen Sprachen* (2 vols.; Berlin, 1908–13) and in a more succinct form: *Kurzgefasste vergleichende Grammatik der semitischen Sprachen; Elemente der Laut- und Formenlehre* (Berlin, 1908), and followed up his magnum opus with such 'aftermath' studies as a Syriac lexicon (2d ed., Halle, 1923–28), an attack on Ugaritic (1941), and a Hebrew syntax (1956), to say nothing of such more tangential ventures, worthy of an 'Islamicist', as the *Osttürkische Grammatik* (Leiden, 1954).

H. Schuchardt typifies the opposite extreme, except that some strains of his most original thinking on general linguistics lay entombed for decades in all manner of digressions and excursuses appended to highly technical monographs. It was a major accomplishment of L. Spitzer's as the helmsman responsible for the *Hugo Schuchardt Brevier; ein Vademekum der allgemeinen Sprachwissenschaft* (Halle, 1921; expanded 2nd ed., 1928) to have isolated certain recurrent themes in Schuchardt's many-pronged œuvre and to have assembled relevant extracts from numerous scattered writings under such telltale headings as "Der Lautwandel", "Etymologie und Wortforschung", "Sprachmischung", "Sprachverwandtschaft", "Urverwandtschaft", "Sprachmischung", "Sprachgeschichte und Sprachbeschreibung", "Der Individualismus in der Sprachforschung", etc.

Schuchardt was not alone in freeing himself from the confinement to a narrow specialty. Among Germanists let me single out E. Sievers (1850–1932), who started out as a precocious expert in OHG texts, from that vantage point addressed himself not only to the preparation of excellent historical grammars (the best-known bear on Old English), as was customary in those days, but also to the study of general articulatory phonetics (*Grundzüge der Lautphysiologie*, 1876, in later editions transformed into *Grundzüge der Phonetik* [1881–1901]), then expanded a fairly early, still conventional concern with paleo-Germanic metrics (1893) into a unique expertise in a newly founded discipline: *Ziele und Wege der Schallanalyse* (Heidelberg, 1924), with very special attention to the New Testament (*Das Neue Testament schallanalytisch untersucht*, 1921), to say nothing of his bold metric and rhythmic forays into classical Hebrew. Among Anglists groping for such an expanded range of curiosity about language and languages the name of Otto Jespersen immediately comes to mind. But, for all their brilliance, even men like Schuchardt, Sievers, and Jespersen hesitated to offer any integrated theory of language change.

The major exception in this respect was H. Paul (1846–1921) as the author of that classic treatise of neo-Grammarian methodology, *Prinzipien der Sprachgeschichte* (Halle, 1880; revised editions, 1886, 1898, 1909, 1920). There is no need for any critical discussion in the present context of Paul's long-tone-setting book, in part because a very searching and illuminating critique appeared just a few years ago (U. Weinreich, W. Labov, and M.I. Herzog, "Empirical foundations for a theory of language change", in *Directions for historical linguistics* 95–195, esp. 104–19 [Austin and London, 1968]), in part because Paul wrote his one broad-gauged book at a relatively early stage of his career, so that its original (and most influential) edition falls outside the period here surveyed.

It is significant that Paul was neither a comparatist on the ambitious Indo-European scale, nor even one on the far more modest Germanic scale, except for a few minor and isolated ventures, such as his *Untersuchungen über den germanischen Vokalismus* (Halle, 1879). If one disregards his editorial stewardship of the *Grundriss der germanischen Philologie* (1891–93; rev. ed., 1900–09), he was essentially a student of literary German, seldom tempted to encompass, even in his flash-backs, any material anteceding the Middle High German period. This limitation holds for his monumental *Deutsche Grammatik* (5 vols.; Halle, 1916–20) even more than it does for his handy *Deutsches Wörterbuch* (orig. ed., Halle, 1897) and colors even monographs overtly not so confined, e.g. "Über Kontamination auf syntaktischem Gebiete", *SbBAW*, 1919:2. In a way, Paul thus short-circuited classical comparatism, studying a single language in depth and extrapolating from this thorough self-

It was, chiefly, the — albeit quantitatively weak — Gallic resistance to this tide of overspecialization which paved the path to certain significant alternatives. For one thing, there was the lucidity of thought and presentation, the art of isolating and identifying ('dégager') the essentials and of pitting them against the particulars, which were deeply embedded in the tradition of French culture, marked by a cult of elegance and selectivity rather than one of impetus and massiveness. For another thing, there was the almost dynastic succession of a number of personalities — in part merely judicious and far-sighted, in part scintillating and charismatic — under the roofs of the Collège de France and the École Pratique des Hautes Études (a Michel Bréal, a Ferdinand de Saussure, an Antoine Meillet, an Émile Benveniste), who could be relied upon to strive for a sober philosophical view of language (including its flux), for a recognition of broad concepts and common denominators in the analysis of change, and, in general, for the restoration of balance and perspective. It was thus the counterthrust of Paris and Geneva against Berlin, Jena, and Leipzig—and, at a later stage, the well-known Romanophilia of East Europeans, especially those of Slavic loyalty — which best explains the back-swing of the pendulum toward a more general approach in the first third of the present century. Let me at once admit that in diachronic linguistics this long-overdue retreat from *détaillisme* was hesitant and — unsupported as it remained by the vogue for pragmatism — produced far fewer and far less sensational results than on the synchronic plane, which was unencumbered by cross-connections with other disciplines and almost inviting purism and abstractionism.

If it is true that one finds copious traces of this commitment to 'généralités' in the works of a J. Vendryes, of a M. Grammont, of an A. Sèchehaye, and of a C. Bally,[6]

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immersion in his own tongue and from concomitant familiarity with what other scholars were discovering in the adjacent domains a general methodology interestingly argued and incisively worded. Toward the very end of his life he went one step further and allowed his curiosity to broaden out, so as to include the kernel of all historically slanted disciplines; cf. his pamphlet, *Aufgabe und Methoden der Geschichtswissenschaften* (Berlin and Leipzig, 1920).

[6] These four French (and French-Swiss) scholars form the backbone of a whole generation, and it is worthwhile to observe how they attempted to balance and to reconcile their narrower and their broader interests.

Though a scholar of not quite such an imposing stature as his teacher and friend Meillet (about whom he wrote a masterly commemorative essay), Vendryes was essentially an IE comparatist, with real expertise in just a few Western languages, and a man with a finely honed historical mind, but his broad-mindedness and good taste (suffusing his chiseled style) saved him from bogging down in details. Self-imposed limitation, on one level of research, and, on another, the ability and eagerness to engage in cautious generalization are both reflected in his selection of articles, *Choix d'études linguistiques et celtiques* (Paris, 1952). An expert Celticist he was, with heavy specialization in the field of Irish ever since his Paris dissertation (*De Hibernicis vocabulis quae a lingua Latina originem duxerunt*, 1902) and his first major synthesis: *Grammaire du vieil irlandais: Phonétique, morphologie, syntaxe* (Paris, 1908); but he also, separately, demonstrated his prowess as a Latinist: *Recherches sur l'histoire et les effets de l'intensité initiale en latin* (Paris, 1902) and as a Hellenist: *Traité d'accentuation grecque* (Paris, 1904), and it is this dual accomplishment in the paleo-IE field that prompted Meillet, in 1927, to select him as a partner for an early experiment in contrastive linguistics: *Traité de grammaire comparée des langues classiques* (1927; 2nd ed., revised by Vendryes alone, 1948). The historian in Vendryes urged him openly to declare linguistics to be ancillary to history: *Le langage: Introduction linguistique à l'histoire* (Paris, 1921; the manuscript was ready for publication in 1914), a book

it is obviously the gigantic œuvre of Meillet, with its tentacles extending in all legitimate directions of Indo-Europeanist inquiry, that is of crucial relevance in this context and almost dramatically invites comparison with Brugmann's — and his peers' — equally impressive but quite differently slanted production. Like the Central European comparatists, Meillet, sometimes in collaboration with the best among his students, produced a number of specific historical grammars (which he balanced by more elastic and far more readily assimilable 'language histories' on two occasions, however); he also published a string of books and articles embracing the entire domain of Indo-European.[7] But where Brugmann (with the help of B. Delbrück) had

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translated into several languages (into English, by P. Radin, as early as 1925), before it was eclipsed by Saussure's far more daring and excitingly phrased *Cours*.

As a young man M. Grammont (1866–1944) dabbled in comparative Romance and I-E linguistics, to the extent that they impinged on general problems of language change; witness his dissertation on consonant dissimilation in I–E and Romance (Dijon, 1895), interest in which — long dormant — has of late been revived through R. Posner's excellent Oxford dissertation (1962) and through K. Togeby's critical response to it (1964). In later years, Grammont's concern with classical comparatism weakened perceptibly, but he salvaged that ingredient of early curiosity which bore on 'saltatory' or 'sporadic' sound changes, i.e., changes pervading and, in part, underpinning the histories of different languages, and expanded it into his magnum opus, the *Traité de phonétique* (Paris, 1933; 4th ed. 1950). The esthetician in Grammont meanwhile drove him to devote much time and a generous dosage of energy to poetics (esp. metrics) and stylistics, with almost exclusive attention to French, while his knack for lucid, forceful presentation accounts for the inordinate circulation of at least two books so slanted: *Le vers français, ses moyens d'expression, son harmonie* (1904; then, with publishers twice changed, 2nd ed., 1908; 3rd ed., 1923; 4th ed., 1937 and 2nd printing 1947), and *Petit traité de versification française*, which flanks his other popular success, the *Traité pratique de prononciation française* (1914) — possibly the model of T. Navarro's equally famous Spanish counterpart (1918); but the heritage of the old commitment to I-E studies broke through, quite unexpectedly, in the posthumous treatise, *Phonétique du grec ancien* (Lyon, 1948).

C. Bally (1865–1947) and A. Sèchehaye (1870–1946) are, of course, the two Saussurians par excellence, being jointly responsible for that highly successful, if in retrospect controversial, venture — the manufacturing, from loose lecture notes, of a *Cours de linguistique générale* credited to the founder of the Geneva School. (Bally also teamed up with L. Gautier in collecting and editing the *Recueil des publications scientifiques* [Heidelberg, 1922] of his teacher.) Less frequently mentioned is the fact that both scholars showed traces of abstract Saussurian-style thinking while their master was still alive, hence, before the publication of the *Cours*: Bally — originally a Euripides scholar (1889) — in his succinct *Précis de stylistique* (Genève, 1905) and his more elaborate *Traité de stylistique française* (Heidelberg, 1909); Sèchehaye in his *Programme et méthodes de la linguistique théorique; psychologie du langage* (Paris, 1908). The later, highly original, if separate, developments of both scholars in the direction of synchronic analysis, culminating in Bally's masterpiece, *Linguistique générale et linguistique française* (Paris, 1932; 2nd ed., 1944, twice reprinted, also translated into and adapted to Italian by C. Segre), need not detain us here. Suffice it to state that neither pioneer of descriptivism allowed his old I-E and Romance training to go to waste; if Sèchehaye's little-known *Éléments de grammaire historique du français* (Genève, 1909–10) pertains to the center of his lifespan and may reflect an uncherished pedagogical commitment, Bally's *Manuel d'accentuation grecque* (Bern, 1945), was, undeniably, the work of a retired octogenarian who could afford to engage in favorite pastimes.

[7] Of Meillet's twenty-odd book-length publications, at least four aimed at a total grasp of I-E: *Introduction à l'étude comparative des langues indo-européennes* (Paris, 1903; 7th ed., 1934); *Les dialectes indo-européens* (Paris, 1908; 2nd ed., 1922); a collection of articles, some never before published: *Linguistique historique et linguistique générale* (Vol. 1 — Paris, 1921; 2nd ed., 1926; Vol. 2 — 1936); and *La méthode comparative en linguistique historique* (Oslo and Paris, 1925). Scores of

hewed an exclusively Indo-European *Grundriss*, Meillet (with the assistance of M. Cohen) countered with a universalist encyclopedia, *Les langues du monde*; where Brugmann (succeeded by W. Streitberg) for decades steered a narrowly circumscribed journal (*Indogermanische Forschungen*), Meillet, for an approximately equal length of time, presided over a much more generously planned symposium: *Bulletin* (and, for a while, also *Mémoires*) *de la Société de linguistique de Paris*; where Brugmann, despite the deceptively ambitious scope of the titles of certain of his papers, in reality seldom if ever bothered to transcend the frontiers of the chosen language family, artificial languages excluded, Meillet — without at any moment ceasing to be a passionately committed Indo-Europeanist — took pains to formulate certain ideas in such fashion as to make them more universally applicable.

In this connection it is rewarding to scan the formal bibliography (running to 541 titles) of Meillet's publications, prepared by his star pupil Benveniste and, even more so, the appended analytical break-down of these writings, again from the pen of Benveniste, arranged on the strength of topic, ambit, and perspective.[8] With a minimum of comment and no ostentation, Benveniste, at the outset, draws a very sharp line between those of his teacher's inquiries squarely directed toward Indo-European and others, revolving around 'Linguistique historique et générale'. The latter domain is subdivided, by delicate typographic implication rather than by overt labeling, into seven narrower fields, or perhaps approaches, the respective tags for which should, in all likelihood, be

(a) "Language as a social institution" (cf. 'Langue et écriture', 'Structure des faits linguistiques', 'Lois du langage', 'Linguistique historique et générale');

(b) "The status of comparative grammar" (cf. 'Grammaire comparée: difficulté générale, histoire et état des études, méthode');

(c) "Evolution of language and its study" (cf. 'Légitimité de la linguistique historique', 'Développement des langues', 'Différenciation et unification des langues', 'Convergences des développements', 'Changement de langues', 'Bilinguisme', 'Évolution des formes', 'Renouvellement des conjonctions', 'Genre et élimination de la flexion', 'Classification des langues', 'Parenté des langues', etc.);

(d) "The boundaries, in rough outline, of the major subdisciplines or strata" (cf. 'Différenciation des phonèmes', 'Terminologie de morphologie générale', 'Caractère concret du mot', 'Caractères du verbe', 'Expression des temps', 'Méthode de la syntaxe', 'Théorie de la phrase');

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articles, ranging chronologically from a piece as early as "De quelques difficultés de la théorie générale des gutturales indo-européennes", *MLS* 8.277–304 (1893–94) to such samples of mature scholarship as "Théorie du rythme et du ton en indo-européen", *BSL* 31.1–7 (1931) and "Caractère secondaire du type thématique indo-européen", *ibid.* 32.194–203 (1931), are likewise comparatively slanted. Nevertheless, the overwhelming majority of Meillet's writings centered around a single I-E language or subgroup of languages — typically, Iranian, Armenian, Greek, Latin, Slavic, Baltic, or Germanic, and only at rare intervals Hittite, Tocharian, Sanskrit, Italic, Celtic, Albanian, or Romance.

[8] For all its excellence the 'official' Meillet bibliography published in *BSL* 38.43–68 (1937) stands in need of expansion, on account of several books reprinted posthumously and, in some instances, revised by Meillet's partners (e.g. A. Ernout and J. Vendryes). The 'definitive' bibliography may well include formal reviews of his books and the weightier reactions to all his publications. Also, Benveniste's splendid Analytical Index (63–68) aims at doing justice to the articles alone; if revised, it could gain from the inclusion of books in the purview aimed at.

(e) "Languages in contact" or "External influences" (cf. 'Interférences entre vocabulaires', 'Comment les mots changent de sens' [this theme might conceivably have been transposed to some other slot], 'Influences de la Bible');

(f) "Separate problems of literary and standard languages; their cultural and political implications" (cf. 'Langues littéraires', 'Langue et nationalité', 'Langues modernes de l'Europe', 'Situation des langues en Russie et en Autriche-Hongrie — dans le bassin de la Baltique — en Asie');

(g) "The bearing of linguistics on language teaching" ('Linguistique et enseignement de la grammaire').

It is always stimulating to observe Meillet in action and to watch Benveniste organizing and categorizing the legacy of his teacher. Not all of the subgroups thus sketchily individuated are of particular relevancy to the study of 'glottodynamics', i.e. of the phenomenology of language change; but subgroup (c) represents the real kernel of the type of study we are here striving to isolate, and small chunks of the material scattered over the other subgroups can probably be cautiously lifted from the niches to which they have been assigned and added for good measure.

Among Meillet's direct students, both foreign and domestic, this enhanced concern with underlying broad issues has been discernibly intensified. If one could, at first glance, overlook it in Alf Sommerfelt's scattered writings on Scandinavian, Celtic, and Australia's aboriginal languages, the posthumous collection of his articles — many of them diachronically sloped or, at least, rich in implications for diachrony — brought out this quality quite unmistakably.[9] What characterizes such studies, even those quite technical in tenor, is that each contains, as a clearly recognizable separate dimension, a methodological or theoretical message which may be tested through deft application to an unrelated slice of material. Brugmann's (or Wackernagel's, or Streitberg's) monographs also included such messages, but they were, as a rule, deeply buried beneath the surface, less tidily capsulized, and had to be extricated through careful, leisurely reading of studies often bristling with exotic data, prohibitively difficult for the uninitiated and the less specialized. Henceforth, the task of filtering and distilling became incumbent on each hard-pressed author, rather than on that nearly extinct species of 'unhurried readers'.

Within the pleiad of Meillet's direct disciples, two whose meteoric rise falls into the

[9] Three years before his death A. Sommerfelt (1892–1965) — a prominent Norwegian academician who felt very much at home in Paris — issued a miscellany of ca. fifty articles, covering a span of possibly forty years; the very title of the finely balanced collection, *Diachronic and synchronic aspects of language*, betrays the author's neat split of interest along the horizontal and the vertical axes. Though Sommerfelt untiringly declared himself a partisan of a restrained, enlightened brand of structuralism, he also favored the analyst's immersion in relevant social and historical conditioning factors, witness the two easily best-known articles among those absorbed into the multilingual collection: "Language, society, and culture" (87–136) — which has a well-nigh Sapirian ring — and "Sur la propagation des changements phonétiques" (158–197). Sommerfelt's book, compiled toward the end of that responsible scholar's distinguished career, elicited numerous reviews the world over (K. Baumgärtner, É. Benveniste, L. Durovič, G. Francescato, K. Horálek, F.W. Householder, J. Loicq, E. Pulgram, E.G. Quin, J. Vachek, L. Zgusta, and no doubt others); far and away the most noteworthy critical appraisal was contributed by W.P. Lehmann, see *RomPh* 21.67–75 (1967–68).

mid-twenties and who, as a result of this chronological circumstance, benefited from the publication of, and reverberations to, the book known as Saussure's *Cours* as well as from the stirrings among the avant-garde theorists usually referred to as the 'Prague Group', two deserve very special mention within the context of this section, Émile Benveniste and Jerzy Kuryłowicz. The bulk of their writings can — and should — be appositely examined under the heading of comparative Indo-European studies; yet such a limitation would hardly do justice to the aggregate of their — often intertwined — activities and to the full impact of their respective œuvres. Quite apart from the fact that both scholars have quite deliberately exceeded the confinement to Indo-European (Benveniste has shown interest in Akkadian, Sumerian, and American Indian; Kuryłowicz has developed into a full-fledged Semitist; both have occasionally trespassed on the Romance domain, Benveniste through his sustained curiosity about his native French, his Polish friend through his response to the challenge of Hispano-Arabic[10]), they have grown into major figures, known and esteemed on both sides of the Atlantic, as dynamic and imaginative students of general linguistics. (This is what separates them principally from a Hirt, or a Pisani, or a Pokorny, or a Kronasser.) And unlike others, of weaker mettle, who have tended to cut their ties to historicism, both have accomplished this expansion without abandoning one inch of the ground previously held. By no means indifferent to the beckoning call of descriptive analysis,

[10] For Benveniste a modest measure of concern with contemporary or fairly recent French has been something of a hobby, yielding such fruits as occasional lexical vignettes, e.g., "A propos du fr. *déjeuner*", *RomPh* 10.145 (1956–57), or syntactic notes, the best-known — and, given other scholars' parallel stirs, timeliest — of which is presumably "Sur les relations de temps dans le verbe français", *BSL* 54/1.69–82 (1959), echoing an earlier venture: "Structures des relations de personne dans le verbe", *ibid.* 43/1.1–12 (1946–47). Also, his expertise in paleo-I-E has not prevented him from evincing curiosity about an assortment of modern languages, as in his 'categorially' slanted paper on verbs derived from fixed phrases: 'Les verbes délocutifs', *Studia philologica et litteraria ... L. Spitzer* 57–63 (Bern, 1958); all of which clearly does not yet make him a comparative Romanist in any full sense of the word. Kuryłowicz has been in a rather different situation because to his superb command of French, such as one would expect of a versatile Polish intellectual, he added, by the midtwenties, a separately acquired mastery of Spanish, with particular emphasis on Hispano-Arabic. It was, in all likelihood, this two-pronged specialization which, decades later, gave him the unique ease with which he, enviably enough, now moves, at will, from I-E to Semitic and back. Thus, one of his two classic treatises, *L'apophonie en indo-européen* (Wrocław, 1956) served him as a stepping-stone for such explorations in an adjoining field as the pilot article, "Esquisse d'une théorie de l'apophonie en sémitique", *BSL* 53/1.1-38 (1957–58), and the subsequent monograph, *L'apophonie en sémitique* (Wrocław, 1961).

In this context one is also reminded of Giacomo Devoto, whose real mastership is displayed to best advantage in his inquiries into paleo-Italic culture (cf. *Gli antichi Italici*, 2nd ed., Firenze, 1951), but who, true to his rôle of gentleman-scholar, has managed, among his numerous active side-interests (cf. the bibliography prefixed to his *Scritti minori* [Firenze, 1958]), to reserve ample time for research in his native Italian, with an increasingly heavy stress on stylistic analysis and with attention to the literary quality of the specimens examined. Cf. his successful synthesis, *Profilo di storia linguistica italiana* (Firenze, 1953; 2nd ed., 1954; 3rd, 1960), discernibly slenderer than his friend B. Migliorini's masterpiece, the *Storia della lingua italiana* (1960); essays on poets, both old and modern, such as Torquato Tasso and Giosuè Carducci; and various experiments with stylistics — almost to the exclusion of formal large-scale Romance comparatism, though there is in his record no dearth of small forays into the territory of individual sister-languages, such as "Storia della lingua romena e storia linguistica della Romenia", *Omagiu I. Iordan* 235–40 (Bucureşti, 1958).

they have steadfastly attempted to enrich their historical studies through systematic application of structural ideas, cultivating general linguistics so as to strike a balance between its synchronic and its diachronic plane. It is their meritorious performance as liberally-minded diachronists that is of primary relevance to us here.

Benveniste's intellectual growth can be taken as a paradigm of the opportunities and limitations attaching to general diachronic linguistics, as this discipline takes shape and acquires a sharply etched identity before our eyes. Characteristically, though known for his precociousness, that scholar was in no unseemly hurry to present a set of broad generalizations: he started out, overtly, with particulars, though his endowment with a power of abstraction was, of course, active from the start and simply moved more and more into the foreground of his commitments. Another distinctive feature of Benveniste's development has been a certain steadiness of purpose combined with elasticity — an attitude which has prompted him not to jettison earlier concerns and enthusiasms as his interests gradually expanded. This situation accounts for the utter lack of unstableness, for the growing complexity of his thinking, and, not least, for the fact that he reached his summit — unbroken by the terrible reverses he suffered during the war lustrum (1940–45) — while he was in his fifties and sixties.

Benveniste (b. 1902, in Syria) came to the attention of scholars first as an exceptionally talented budding expert in paleo-Iranian, and it is his appointment to a chair in Iranian philology at the École des Hautes Études which served as a wedge for his subsequent career. Again by no means atypically, Benveniste, far from posing as a 'pure linguist' insouciant about other phases of culture, made it a point to split his interests rather evenly between linguistics and mythology, as Michel Bréal had done before him, at the Collège de France. This search for a broad philological foundation explains why Benveniste's share in the *Grammaire sogdienne* (Vol. 2 [1929]: Morphology, syntax, and glossary — supplementing R. Gauthiot's Vol. 1 [1914] on phonology), his thorough revision (1931) of Meillet's *Grammaire du vieux perse*, and his monograph on Avestan infinitives (1935) were balanced by such differently slanted ventures as the four Sorbonne lectures (1926) eventually published in English translation: *The Persian religion, according to the chief Greek texts* (1929); and the study, written in collaboration with the Sanskritist L. Renou, *Vṛtra et Vṛθragna; étude de mythologie indo-iranienne* (1934). If the year 1935 made Benveniste, as we shall see, a contender for world leadership in comparative Indo-European studies, this broadening of responsibility did not mean the abandonment of his earlier domain of specialization. There continues a flow of studies (textual editions, translations, exegeses, lexical and onomastic analyses bearing on that early favorite, Sogdian (*Textes sogdiens, édités, traduits et commentés* and introduction to *Codices Sogdiani, manuscrits de la Bibliothèque Nationale* ..., both in 1940; "*Vessantara Jâtaka*", *texte sogdien édité, traduit et commenté* [1946] — a replacement for R. Gauthiot's pioneering edition [1912]); extending to a new, even more challenging favorite, Ossetic: *Études sur la langue ossète* (1959, preceded by a major article); encompassing paleo-Iranian as a

whole, with side-glances at cultural conditions: *Titres et noms propres en iranien ancien* (1966), and occasionally echoing the earlier immersion in magic and religion (*Les images dans l'ancien Iran*, a booklet traceable to 1938).[11]

If the impression initially produced, up until the early 'thirties, was that of an exceptionally endowed young man likely to occupy, within his master's entourage, a niche comparable to that of J. Vendryes, in Celtic, A. Ernout, in Latin, or A. Vaillant, in Slavic, events before long showed that Benveniste was capable of rising to a higher plateau. His curiosity about Latin had at all times been in evidence (even his juvenilia contain etymological notes so oriented), and, as a student of Iranian, he was expected to have all Greek sources at his fingertips — and to know how to handle them. The first book-length venture into the core of general Indo-European, however, and one neatly divorced from historical and philological preoccupations, had to wait until 1935, when his *Origine de la formation des noms en indo-européen* was submitted as a 'thèse principale', provoking no immediate stir, but recognized, after the lapse of a few years, as a work fully as revolutionary in the Indo-European domain as had been J. Schmidt's *Die Verwandtschaftsverhältnisse* (1872), K. Verner's "Eine Ausnahme der ersten Lautverschiebung" (1875), and the young F. de Saussure's *Mémoire sur le système primitif* ... (1878–79). The history of the second part of, or sequel to, *Origine* is well-known: the nearly final draft was sequestered, then apparently destroyed or scattered during the occupation of Paris, while Benveniste went into hiding. It bespeaks his stamina and determination that he later reconstructed the text from scratch, presumably improving upon it substantively while polishing it to a fine sheen: *Noms d'agent et noms d'action en indo-européen* (1948[–49]). The next two decades witnessed a succession of excellent pan-I-E articles, displaying the foreseeable balance of engrossments in grammar and in lexicology — an equilibrium very rarely attained on the contemporary scene. With characteristic independence of mind, and riding roughshod over the scale of current preferences, Benveniste has made a point of assembling his slowly ripened lexico-etymological probings into a vast synthesis just off the press. *Le vocabulaire des institutions indo-européennes* (2 vols.; Paris: Éditions de Minuit, 1969).[12]

[11] There would be little point in going into details about this favorite facet of Benveniste's far-flung activities, which encompasses also certain archaic non-I-E languages, once spoken nearby (say, Sumerian and Elamitic). Of greater immediate relevancy to us is the fact that in this domain, as perhaps only — on a minor scale — in his inquiries into Greek and Latin, Benveniste, shunning no amount of drudgery, has underpinned his 'stratospheric' linguistic analysis with down-to-earth, laborious philological sifting of the evidence. He has used, as a rule, diverse media to publish his meticulously philological and his purely linguistic inquiries; cf. the *Textes sogdiens* of the year 1940, with its conventional apparatus of transliteration, translation, commentary, and glossary, such items as "Notes sur les tablettes élamites de Persépolis", *JA* 246.49–65 (1958), and "Inscriptions de Bactriane", *ibid.* 249.13–52 (1961). What matters above all is the fact that with Benveniste — unlike many other influential linguistic thinkers of this century — abstractionism never became an inescapable pose. Rather has Benveniste been handling philology and linguistics, with equal care, devotion, and at the same time, detachment, as two different lenses, mutually complementary and of comparable rank.

[12] Aside from writing pan-I-E studies explicitly marked as such — including several book-length ventures, plus that splendid zoönymic article, "Noms d'animaux en indo-européen", *BSL* 45/1.74-103

Yet even this level, which few would dare to scale, hardly represents, in the case of this exemplary scholar, the highest tier aimed at or attained. The strong influence of Saussure's *Cours* (further intensified by the unflagging awareness of the Swiss genius' ten-year stint of teaching at the École Pratique in Paris), the powerful impact of Edward Sapir's string of essays, *Language* (1921) and other writings — though the Frenchman and the American never met in person —, and the pattern of cordial relations which Meillet and Benveniste alike established with the predominantly Slavic 'Prague Circle', were three major factors which — in alliance with a fourth and more decisive factor, namely the bias of Benveniste's mental predisposition — prompted our Indo-Europeanist to espouse the cause of general linguistics as an adjunct to, but certainly in no way as a 'fashionable' substitute for, his earlier intellectual involvements.

General linguistics must not obviously be thought of as something separable from any sophisticated variety of Indo-European studies, and our intermittent use here of such metaphors as 'plateau' or 'tier' need not make us captives of our own imagery. There has been a measure of interpenetration all along in Benveniste's œuvre between classic structuralism and classic historicism, an osmosis observable even in the domain of lexicology where one would least expect or demand it.[13] What is here meant by transcendency of the formal confinement to the Indo-European field is either the choice of topics assigning to linguistics as a whole a place in the edifice of cognitive pursuits (in preparing his selective volume of papers so slanted, *Problèmes de linguistique générale* [1966], Benveniste himself grouped them under the following

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(1949) — Benveniste has displayed his knack for comparatism in many subtle ways, e.g., first, by winnowing out inter-I-E borrowings: "Mots d'emprunt iraniens en arménien", *ibid.* 53/1.55-71 (1957–58); second, by isolating one conspicuous member of the sprawling family and contrasting it with all its cognates, a technique first tried out with Tocharian ("Tokharien et indo-européen", *Festschrift Hirt* 2.227–40 [1936]), then perfected and polished to a fine sheen with Hittite (*Hittite et indo-européen; études comparatives* [Paris, 1962]); and, third, by selecting for discussion in his favorite journal, through some kind of unacknowledged rotation, a wide range of languages (one year, Gothic; the next year, Armenian; then Old Persian, etc.), rather than allowing — as did most students of Meillet's — philological infatuation with a single language and culture to smother nearly all curiosity about its congeners.

[13] Benveniste's engrossment by non-I-E has been in evidence intermittently. It is perceptible in the book reviews he has volunteered for the *BSL* and in those articles and monographs which concern themselves with lexical admixtures of non-I-E stock. Elsewhere, collateral references to non-I-E languages serve the purpose of identifying or, at least, adumbrating universals, both synchronic and diachronic. This applies, for instance, to the highly concentrated paper, "Mutations of linguistic categories", *Directions for historical linguistics* 83–94, where a Gulf language (Tunica), Aztec, and Old Turkish (Gabain) flank Middle Greek in driving home the typicality of certain Late Latin and Early Romance periphrastic constructions, esp. for the future tense. On other occasions the temporary immersion in an exotic world seems to have provided both stimulus and relaxation; in this sense, the famous descriptive sketch, "Le vocabulaire de la vie animale chez les Indiens du Haut Yukon (Alaska)", *BSL* 49/1.79–106 (1953) forms an attractive pendant to the author's more technical diachronic probings in I-E zoönymy. Easily the best clue to Benveniste's thinking on key problems of general linguistics is furnished by his incisive discussions of papers read at the monthly meetings of the Paris Society ('interventions') and dutifully recorded in its *Bulletins*. A systematic classification of these insightful comments would be invaluable.

headings: 'Transformations de la linguistique', 'La communication', 'Structures et analyses', 'Fonctions syntaxiques', 'L'homme dans la langue', 'Lexique et culture'); or the study of certain types of sound systems, grammatical categories, semantic configurations, and the like, across language families, i.e., in neo-Humboldtian fashion. The latter group of inquiries, at which — aside from phonology — Benveniste excels as perhaps no other living linguist, has not yet yielded any book-length monograph or collection, but the material is inventoried and readily accessible. It is of course not at all mandatory that such exploratory studies be all or for the most part diachronically slanted — though such a leaning would make them doubly valuable for our purpose.

Of the 28 essays entering into the *Problèmes* sampler, only one clearly predates the war so far as the actual publication date is concerned, and in that invitational piece, "Nature du signe linguistique" (1939), the author unmistakably harks back to Saussure's *Cours*. Of the remaining items, one appeared in 1946, two in 1949, and that same number the following year; since the latest papers belong to the 1963 vintage, it is clear that the book is representative of a fifteen-year crest of this activity, stretching from 1949 to 1963, and it may be worth adding that there followed no ebb upon this flood, so that an additional volume absorbing the output of 1963–69 plus any neglected overflow from the three preceding lustra could easily be produced.[14] The media in which the articles originally appeared (including scholarly but non-technical journals) and the occasions to which they were tailored may have predetermined the scope and colored the tone of several contributions, but on the whole Benveniste was, in all likelihood, reasonably free from onerous constraints. A few of the articles pertain to that class of bold cross-linguistic bird's-eye views, in the Humboldtian vein, which really stand apart, be it only through their far heavier bibliographic documentation and through the pervasive appeal to circumstantial evidence, and these might conceivably have justified a separate collection of specimens (No. 13: "La phrase nominale"; No. 14: "Actif et moyen dans le verbe"; No. 15: "La construction passive du parfait transitif"; No. 16: "'Etre' et 'avoir' dans leurs fonc-

[14] In the years 1963–69 Benveniste's research showed the same balance between a generalist's and a particularist's concerns. A brilliant lecture course of his on composition at the Collège de France not only inspired auditors, such as the talented Slavicist J. Veyrenc, but yielded directly some mature fruits, e.g. the two articles "Formes nouvelles de la composition nominale", *BSL* 61/1.82–95 ([a] pseudo-Hellenisms coined by modern scientists in violation of authentic Greek usage, e.g. *microbe, otarie, photographie*; and [b] 'synapsis', e.g. *pomme de terre, robe de chambre*, a pattern of conjoining recognizable in French by six distinctive features and contrastable [α] with genuine 'composition': *entresol, marche-pied*, and [β] with conglomeration: *va-nu-pieds, monte-en-l'air*); and "Fondements syntaxiques de la composition nominale", *BSL* 62/1.15–31 (1967–68), an attempt to yank loose nominal composition from its traditional ties to morphology and to depict it as a kind of micro-syntax, with congealed transformations of free syntactic sequences (this time the illustrations are drawn from Sanskrit, Greek, and Germanic). In this last paper Benveniste probably comes closer than at any other juncture to transformational-generative syntax; as is well known, it was he who encouraged his young Belgian student N. Ruwet to write a basic treatise on the early phase of that doctrine, the *Introduction à la grammaire générative* (Paris, 1968).

tions linguistiques"; No. 17: "La phrase relative, problème de syntaxe générale").[15] The preponderant type of essay, however, is one which involves a ranking linguist's 'prise de position' toward a multitude of problems arising from within the discipline, at the intersection of its threads, as it were, or impinging from without, through contacts and conflicts with adjacent provinces of knowledge. The centrality of the chosen issues, all lying athwart the main path of linguistic research, is as patent as is their high degree of generality in theoretical terms ("Communication animale et langage humain", "Catégories de pensée et catégories de langue", "'Structure' en linguistique", "La classification des langues", "Les niveaux de l'analyse linguistique", "De la subjectivité dans le langage", "La philosophie analytique et le langage", "La notion de 'rhythme' dans son expression linguistique", etc.). These topics are clearly akin to those that Benveniste, in 1937, so neatly segregated from the bulk of Meillet's writings; indeed, one is led to wonder whether his own gradual conversion, rather late in life, to problems of such latitude was not due to the fact that his teacher's mantle had meanwhile fallen on his shoulders. Additional factors may very well have been the circumstances (a) that he himself elected to speak out on issues of broad purport only after having accumulated a sufficient treasure-trove of first-hand experience; (b) that the demand for such broad-gauged pronouncements increased sharply after the last war; (c) that, from a certain juncture, he regretted his generation's overindulgence in atomistic specialization; (d) that his enforced isolation during the war directed his thoughts toward universals. Whichever the cause or combination of motives, the results have been gratifying.

The message contained in these elegant essays will yet hold our attention, but to round out the survey of Benveniste's three hundred-odd publications let me first briefly report that his œuvre also contains a number of short to middle-sized notes, plus an occasional article, on his native French. These studies, stimulating as they are, constitute a kind of intellectual hobby and betray a rather relaxed attitude. Written with the barest minimum of attention to the sister languages and with equally inadequate concern for the older stages of French, they exhibit a great comparatist caught, for once, in a distinctly non-comparative mood and trusting his flair and introspection more than any other clue. Further guides to Benveniste's thinking are his succinct, precisely tooled book reviews; his carefully formulated 'interventions' in discussion periods, preserved in the published minutes of the Société de linguistique de Paris; and his numerous unpublished lectures and celebrated classroom performances, some of which can be reconstructed through the reports and acknowledgments of his former students and auditors.

The extraordinary prestige attaching, since the late 'twenties, to J. Kuryłowicz's research in Indo-European, including Hittite, and the attention lavished by such authorized younger critics as C. Watkins and J. Puhvel, and by such peers as Benveniste, on the indefatigable Polish comparatist's two post-war magna opera:

[15] I must reserve for a later occasion — perhaps a review article in *RomPh* — a leisurely elaboration on these all too brief remarks.

L'accentuation des langues indo-européennes (1952; 2nd ed., 1958) and *L'apophonie en indo-européen* (1956), have somewhat dulled the readers' attention to his accomplishments as a general linguist, with the possible exception of his two widely consulted papers on the working of analogy (which led to polemic exchanges with W. Mańczak) and on internal reconstruction. It is in his shorter articles — some of them reduced to epigrammatic notes — that this broader curiosity breaks through, a situation which makes it doubly regrettable that the two collections of such pieces currently available — *Esquisses linguistiques* (Polska Akad. Nauk, Prace językoznawcze 19, Wrocław & Kraków, 1960) and the slightly fatter Russian-language counterpart, *Očerki po lingvistike; sbornik statej* (Moskva, 1962) — should have elicited pitifully few discussions. The topics are, in part, very broad, as in — to cite a piece of later vintage — "Le mécanisme différenciateur de la langue", *CFS* 20.47–54 (1963); but one recognizes also the sharp-etched contour of certain favorite subjects, e.g. proper names viewed as objects of a linguist's curiosity: "La position linguistique du nom propre", *Onomastica* 2.1–14 (1956) and, quite recently, in cross-linguistic perspective, "La gémination consonantique dans les noms propres", *BSL* 62:1.1–8 (1967–68) — with a discernible cross-link to that earlier venture, "Formes hypocoristiques et gémination de consonnes", *Onomastica* 6.187–92 (1960). It would be a severe loss if a researcher of Kuryłowicz's caliber were to neglect his major obligation toward fellow-scholars: that of systematizing and synthesizing the mere glimpses that he has so far afforded to insightful readers into the inner chambers of his 'interiorized' edifice of diachronic linguistics.

It is correct to contend that Benveniste and Kuryłowicz have, essentially, been students of Meillet's and owe their technical mastery to their training under that teacher; but that their horizons were opened through early exposure to Saussure's bold abstractionism (which had also been a constant force, albeit a hidden one, in Meillet's performance). Independently, Meillet had fine students of a somewhat more narrowly philological bent, e.g. Ernout, Renou, and Lejeune, who did not so strongly respond to Saussure's challenge; and the late Saussure, in turn, had a following of his own in Geneva, a small group which included Bally and Sèchehaye, and by way of 'second generation', Burger and Frei, all of whom apparently lacked the special deftness — and perhaps the requisite erudition — needed for the reconstruction of temporal sequences of events staggered over wide spaces. Benveniste and Kuryłowicz each combined the two strains, and added, as a further element of enrichment, a set of strong ties to the then tone-setting Prague Circle and to the cutting edge of that 'structuralist' movement — the famous 'Phonologische Arbeitsgemeinschaft'. But even this powerful triple influence apparently did not suffice to provoke them into offering any integrated theory of language change. Ironically, their superb knowledge of the untold complexities of actual developments, plus their awareness of critical gaps in our information, may have inhibited them more than did any other consideration or circumstance of intellectual growth, preventing them from producing any full-blown doctrines though they were willing to make more sweeping generalizations on selected

problems and to place a higher premium on precise formulations than were other Indo-Europeanists, of more conservative persuasion (Streitberg, Delbrück, Pisani, Pokorny, etc.). After all, first-rate historians have seldom made themselves conspicuous through dazzling contributions to sociological theory or to the kernel of political science, nor vice versa.

II

The Prague Circle of the 'twenties and 'thirties was a small, imaginative élite group, which attracted young and middle-aged members steeped, from their student years, in philology and historical grammar and sensitive to humanistic values (esthetics included), but eager to dodge the threat of confinement to myriad details; to raise or to rephrase those disquieting broader questions bearing on constants or universals of structure and causation, which had far too long been swept under the rug; and to maintain a much-needed liaison to philosophy and to other stimulating branches of knowledge. While there was in this movement initially no programmatic preference for synchrony over diachrony — witness its leaders' early formal commitment to a teleological 'platform' — the far higher degree of tidiness that one can aspire to reaching in straight description than in mosaic-like reconstruction and also, in terms of *Zeitgeist*, the lure of superior originality and freshness of approach (amid a certain surfeit with increasingly heavy-handed historicism) made the Prague linguists much more zestful and attractive in their horizontal than in their vertical probings. The one memorable experiment of those years which was slanted along the vertical axis was a middle-sized paper by R. Jakobson, "Prinzipien der historischen Phonologie", *TCLP* 4 (1931), 247–67; however, the author, whose many-sidedness is proverbial, did not, to my knowledge, pursue this line any further. It is significant that a still very youthful Jakobson, in anticipation, as it were, of such masterpieces of his riper age as *Kindersprache, Aphasie und allgemeine Lautgesetze* (1941) and *Preliminaries to speech analysis* (1952), restricted his generalizations to the domain of sounds — an emphasis, for better or worse, characteristic of the Prague Circle and one which sets off that group from yesteryear's other avant-gardists, on both sides of the Atlantic. We shall presently see how this pilot article was later fanned into a flame — by now almost extinguished — by a once ardent disciple of Jakobson's, André Martinet.

If it is true that, in the last analysis, Saussurean thinking has proved to be truly influential not through the celebrated antinomies it helped to dramatize, but through (a) the tone and style of its presentation (a new model of elegance), (b) its trend toward abstractionism and definitional precision, and (c) the preferential status it assigned to a hard core of linguistically relevant questions and materials, then L. Hjelmslev's various modernistic experiments with 'pure linguistics' — not just his glossematic venture — should claim a liberal share of our attention. It has long been known that, as a — slightly unruly — student of the Danish Indo-Europeanist (especially Celticist) H. Pedersen, the young Hjelmslev had his full quota of strenuous apprenticeship in

classical comparatism. Insiders were all along equally familiar with the fact that his teaching program encompassed not only such 'glamorous' subjects as general linguistic theory and descriptive dissection, but also time-honored diachronic reconstruction, with its unavoidable admixture of drudgery.[16] Then again, Hjelmslev's almost ostentatious enthusiasm about his pioneer compatriot Rasmus Rask (1814) and, in a lower key, about Karl Verner (1876) could have provided for him an added incentive to engage in vertical gauging. Finally, among Hjelmslev's own disciples a few had not been so strongly weaned away from concern with language change as not to have found their way back to it, ready to offer new answers to traditional questions.[17] However, until very recently those writings of Hjelmslev's that were most easily accessible outside Denmark, and the considerable corpus of critical assessments of his 'school' that has accumulated over the last three decades focused almost exclusively on the great Scandinavian's descriptive approach.[18] The one book that might have shed light on Hjelmslev's attitude to diachrony — a book on which he was working intensely in the early 'forties (*Sproget: En introduktion*) — appeared only shortly before his death, late in 1963, and, through the efforts of his friend and splendid translator, F.J. Whitfield, in expanded form in 1970 (*Language: An introduction*). It is this slender, compact volume that must serve at this point as a key to Hjelmslev's thinking on the theory of language change and on the methodology of its exploration.

Such, admittedly, is Hjelmslev's forcefulness that every new idea he launches, every old, classic example he revives has a gripping effect on the reader. Yet once that reader frees himself from this fascination and casts a cold look at *Language*, it becomes difficult not to declare the long-delayed book a source of disappointment, at least from our angle. Even when L. Bloomfield, ten years earlier, was writing his own (second) textbook on the same subject and, incidentally, under the same title, he could afford to fall back on a richer experience as dialect geographer and, as a result, to show a firmer grasp of linguistic flux (or, as he dubbed it, fluctuation).[19] This ceaselessly

[16] Interesting retrospective biographic essays on Hjelmslev (1899–1965) have come from the pens of younger fellow-Scandinavians familiar with his closer environment, including E. Fischer-Jørgensen, *AL* 9/1.iii–xxii (1965); B. Malmberg, *SL* 20/2.110–6 (1967); and K. Togeby, *SNPh* 37.269–78 (1965).

[17] Hjelmslev's admirable "Commentaires sur la vie et l'œuvre de Rasmus Rask", a Paris lecture originally published twenty years ago, is now most easily accessible through T.A. Sebeok, *Portraits of linguists* 1.179–95 (Bloomington, Ind., and London, 1966). One fine sample of Togeby's prowess as a historical linguist, in full command of the difficult apparatus, is his oft-cited article: "Qu'est-ce que la dissimilation?", *RomPh* 17.642–67 (1963–64). On Togeby's intellectual debt to, yet relative independence from, Hjelmslev see Martha Garrett Worthington, "Immanence as principle", *RomPh* 24.488–505 (1970–71).

[18] One is reminded of A. Martinet's trail-blazing review article, "Au sujet des fondements de la théorie linguistique de Louis Hjelmslev", *BSL* 42.19–42 (1946); of E. Alarcos Llorach's booklet, *Gramática estructural (según la escuela de Copenhague y con especial atención a la lengua española)* (Madrid, 1951); of S.M. Lamb's twin studies, "Epilegomena to a theory of language", *RomPh* 19.531–73 (1965–66), and "Prolegomena to a theory of phonology", *Lg.* 42.536–73 (1966); as well as of translations into French and appreciations by A.J. Greimas.

[19] In the opening chapter, where Hjelmslev scrupulously refrains from admitting any 'exceptions' from sound correspondences, he introduces the term 'counter-examples' as a label for 'strictly defined and strictly delimited regular domains for which the element-functions do not hold' (30f.). This favorite term of his is reminiscent of L. Bloomfield's famous 'residues'.

eroding undercurrent is absent from Hjelmslev's purview, as is also the crucial fact of the typical speaker's simultaneous membership (even if he is illiterate) in two or even three isolable speech communities, either regionally or socially bounded — a point very heavily stressed in U. Weinreich and his associates' critique (1968) of H. Paul.

What we find instead are beautifully immobilized, rigidified systems (see esp. Chap. 2: "Linguistic structure and linguistic usage", 32–44), in which words filling the unique design of an iron-clad syllabic structure can, to be sure, indefinitely be added to the available stock, but in which that structure itself seems at all points to be equally resistant to inner and outside pressures, as long as the given language state lasts: 'The system of elements is closed, once and for all, but the system of signs [i.e., lexemes, morphemes] is productive' (39). One wonders how this thesis can be reconciled with, say, the observable developments in 20th-century Italian, where certain final consonants, for centuries barred from Tuscan, have suddenly re-entered the periphery of the lexicon via borrowing (*bar*, *frac* 'dinner-jacket', *tram* 'tramway', etc.) — without causing any visible break in the continuity of the language — and may soon start inching their way into the inner shell of the vocabulary. But the mere recognition of a distinction between core and periphery, which of late has greatly excited Czech linguists, implies an elasticity of approach alien to Hjelmslev's unremitting demand for strictness.

Noteworthy is also the fact that Hjelmslev, as an uncompromising purist, deemed legitimate the genetic and the typological, but not the areal, classification of languages. This confinement, if accepted, would de-emphasize many fruitful approaches.

If the one component seemingly absent from Hjelmslev's otherwise rich and varied background was live contact with dialect speech (a laboratory experience which conveys, as do few other performances, the impression of throbbing dynamism, of pulsing 'Sprachleben'), the same reproach cannot be leveled at André Martinet. Indeed, probably no other mid-century scholar from Western Europe came so close, over a period of ten long years (1945–55), to rejuvenating, if not revolutionizing, diachronic linguistics as did Martinet at the peak of his career, which coincided with his appointment at Columbia University. He brought with him, in his tool-kit, the stylistic polish and topical glamor of an enviable training at Paris, under teachers as inspiring and, at the same time, as exacting as Meillet and Benveniste, who encouraged him to combine broadly Indo-European with specialized Germanic studies (the latter's Scandinavian prong included). But if the link to Scandinavia involved a highly prized proximity to Copenhagen and its distinctive variety of structuralism, and if friendship with Trubetzkoy and, for a while, with Jakobson ensured liaison with mid-Danubian modernism, France not only gave Martinet the academic splendor of Paris, where he conducted seminars at the École des Hautes Études even shortly before the war, but also provided the cultural matrix of authentic provincial life away from the capital and, through that matrix, a valuable contact with an ancestral Franco-Provençal dialect. All of this, to be sure, did not automatically make Martinet a full-fledged Romanist, but at least kept ajar a door to the headquarters of Romance scholarship, which were not at all

within easy reach for most Indo-Europeanists and 'modernists'.[20] Add to this Martinet's occasional trespassing on the territory of one 'exotic' language of special relevance to Europeans, Basque; his familiarity, at first hand, with the linguistic 'scene' on both sides of the Atlantic; his navigational skill in piloting, through choppy waters, a journal of broad appeal, *Word*, plus his impressive performance as talent scout and trainer of young scholars, culminating in his careful grooming of U. Weinreich; and it is easy to see why, for a while, he appeared to hold in his hands all the trump cards. From the fairly numerous options briefly open to him he selected, as an opening wedge, diachronic phonemics (or, as he rather stubbornly elected to label it, phonology) and within that discipline, certain characteristic processes which he effectively subsumed under the key word of 'economy' of sound changes. After a number of preliminary studies he presented his principal findings — critique of predecessors, theoretical foundation of his own approach, random illustrations — in a single book, almost euphoric in tone, *Économie des changements phonétiques* (1955), which conceivably produced a stronger stir and longer repercussions, among diachronists, than any comparable book of that decade, if not of that quarter-century.[21] The publication of

[20] Martinet's occasional insistence on his 'realism' must not be divorced from his strong side-interest in certain facets of Romance linguistics (which he strove to saturate with structuralism along both axes); that interest, incidentally, extended on at least one occasion beyond the Pyrenees, witness his well-known paper on the devoicing of Old Spanish sibilants (orig. 1951–52). A sketch of his (synchronic) Franco-Provençal inquiries appeared as a long article: "Description phonologique du parler franco-provençal d'Hauteville (Savoie)", *RLR* 15.1–86 (1944); from that paper he subsequently carved a more ambitious book-length study: *La description phonologique, avec application au parler franco-provençal d'Hauteville (Savoie)* (1956). To some extent *La prononciation du français contemporain* (1945) also pertains to the Romance dimension of Martinet's curiosity, as do papers on contemporary French, like "De l'économie des formes du verbe en français parlé" and "C'est jeuli le Mareuc!" (both date back to 1958). The most up-to-date guide to Martinet's writings will be found in *Linguistic studies presented to André Martinet* 1.1-11 (ed. A. Juilland; New York [1970]).

[21] Though Martinet's conversion to a 'Praguian' brand of structuralism occurred at an astoundingly tender age — his first descriptive articles and notes so slanted, bearing on French and Danish (a first love), respectively, date from the mid-'thirties — the opening fifteen years or so of his creative period disclose as yet no sustained effort to concentrate on a single, particularly rewarding line of advance, in preparation for a break-through. Thus his 'principal doctoral thesis' bore on phonosymbolism in Germanic (1937); a paper written for a congress dealt with the kinship of that same subfamily (1939); a booklet prepared in collaboration with J.-P. Vinay served the needs of the International Auxiliary Language Assn., with headquarters in New York (1946; cf. *Word* 2.37–47 [1946]), and was followed, before long, by a practical textbook of English for French learners (1947), etc. In the difficult war and postwar years 1940–47 Martinet began to aim at striking a more effective balance between the synchronic and the diachronic perspectives; witness his (thrice-published) lecture, "La phonologie synchronique et diachronique" (1940); the occasional deflection of his attention toward older stages of familiar modern languages: "Note sur la phonologie du français vers 1700" (1941) and the appearance, that same year, of the sharply pointed, programmatic note, co-authored by a friend, the many-sided A.-G. Haudricourt, "Propagation phonétique ou évolution phonologique?" as well as of the first — and very stimulating — balance sheet, "Où en est la phonologie?". The year 1949 saw the cautious extension of the author's curiosity into comparative Romance consonantism. The following year showed further advances, this time in the separate directions of Italic and Basque, with continued emphasis on consonant systems. The annexation of a slice of Old Spanish territory and, simultaneously, a long-delayed return to his direct mentor Meillet's far-flung I-E domain through a two-pronged attack on Slavic and Aryan occurred in 1952, along with an emergent — and growing — concern with Celtic, viewed in its substratal interaction with Western Romance. In 1952 Martinet

Économie coincided, however, with the author's return to Paris, where his interest — inexplicably — turned before long to other matters (including descriptive syntax), henceforth removing him, of his own free will, from the forefront of diachronists, where his chances of increasing the impact he had already made seemed to be so excellent.

Several components and characteristics of *Économie* contributed to its instantaneous success. The four-hundred-page book falls rather neatly into two halves, the first reserved for a "General theory", the second for specific "Illustrations". Built into the opening sections of Part I, however, is also a critique of Bloomfieldian behaviorism, of Jakobsonian binarism, and of many elaborate ideas or mere trial balloons launched over a period of six decades by scholars of very different persuasions and backgrounds, all of them bearing on the course and causation of sound change (Martinet's portfolio contains sketches of an Eugenio Coseriu, a Baudouin de Courtenay, an Albert Debrunner, a Pierre Delattre, an Henri Frei; also included are Otto Funke, Maurice Grammont, A. W. de Groot, Eduard Hermann, Louis Hjelmslev, Otto Jespersen, Karl Luick, Anton Marty, Paul Passy, Elise Richter, Hugo Schuchardt, Albert Sèchehaye, Knud Togeby, J. Vachek, George Zipf, to say nothing of his own disciples: A. Juilland, R. L. Politzer, L. J. Prieto, and U. Weinreich). As a result of this 'spicing', almost to the point of saturation, Part I appeared at first glance no less noteworthy as a contribution to the history of linguistics (at a moment when that

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offered the first integrated version of his theory of diachronic phonology, still quite tentative: "Function, structure, and sound change", *Word* 8.1–32 (1952), an article which, despite its awkward English phrasing, at once aroused exceptionally high expectations, made Martinet the logical spokesman for structural linguistics of all hues in A. Kroeber's ambitious and influential miscellany, *Anthropology today* (1953), and the equally logical helmsman, with U. Weinreich at his side, for a less bulky but not one whit more modest venture of the Linguistic Circle of New York: *Linguistics today* (1954). With the transliteration of classical Greek, on the practical side, and, on the speculative side, comparative I-E, the linguistic implications of Germanic settlements, and, for the first time, Semitic consonantism all represented on Martinet's crowded agenda in the mid-'fifties, the appearance of his — nothing short of sensational — book, *Économie des changements phonétiques* (1955), written in scintillating French, seemed to mark a harmonious, virtually foreseeable culmination of a decade of purposefully planned research and immediately became an almost unanimous 'critical success'; see my digest of the gamut of reactions to it in *RomPh* 15.139–153 (1961–62), esp. 141f.

In the last fifteen years, however, Martinet has scored a number of popular rather than of critical successes — an accomplishment attributable to his stylistic mastery and versatility, to his gift for synthesizing, reconciling, and summarizing, to his formidable polemic verve, to his flair for high-level popularization, and, not least, to his shrewd, realistic assessment of the intellectual taste and bent of a broad segment of the general reading public inside France and out. Unfortunately, this maneuver, however skillfully executed, has coincided with a retreat from the earlier quest for genuinely original solutions, a withdrawal particularly pathetic on the side of diachronic probings, and has resulted in loss of favor with demanding critics. The last technical I-E studies of any consequence from Martinet's pen seem to be "Le genre féminin en indo-européen; examen fonctionnel du problème", *BSL* 52.83–95 (1956); "Phonologie et laryngales", *Phonetica* 1.7–30 (1957); and "Les 'laryngales' indo-européennes", *PICL* 8.36–53 (1958). Active concern with general diachronic theory has undergone a similar withering, with only a few very broad-gauged essays standing out, such as "Les problèmes de la phonétique évolutive", *PICPS* 5.82–102 (1965), and "La phonologie synchronique et diachronique", *Phonologie der Gegenwart* 64–78 (1967).

fascinating subdiscipline — currently in full bloom — was passing through a period of relative decay) than as a venture in linguistic theory, which it ostensibly was meant to be and which guaranteed it an enthralled audience. Part II, which contained for the most part scattered articles of earlier vintage, now for the first time assembled, imaginatively refashioned through a clever interplay of cuts and expansions, uniformly cast in highly readable French, and thus often giving a new, sharpened point, disclosed such a pleasing balance of separate but co-ordinated concerns with Indo-European (including Celtic, Italic, Germanic, and Slavic) and Romance (with an arresting emphasis on Old Spanish rather than on French), quite apart from an occasional excursus into Basque, as to attract any reader endowed with a modicum of elasticity and with a taste for suspense. The book also seemed to bridge the depressing gaps between the Old and the New World; between structuralism, dialectology, and linguistics philologically underpinned; between the older and the newer generation; between synchrony and diachrony. In 1955 Martinet was clearly carrying the ball in diachronic structuralism,[22] a temporarily deserted terrain, and his subsequent inability to consolidate this enviable lead created a malaise among his followers and a vacuum which to this day has not been entirely filled.

The concept of a crude 'economy' has, of course, haunted the minds of linguists possibly for as long as a full century, particularly under such alternative labels as 'least effort' or 'saving of neuromuscular energy', viewed as powerful stimuli for sound change. Martinet's principal merit consisted in adding to this slightly controversial notion a touch of sophistication and realism by reconciling it with the tenets of classical structuralism. Henceforth a sound was to be judged as being 'dispensable' or 'undesirable' (to the speech community), hence, in jeopardy, not because its production, observed in isolation, was troublesome, but because it received inadequate collateral support from members of its series (thus, /ž/ strengthens /š/; /p/ and /t/ bolster up /k/, etc.), or because its 'yield' (= Fr. *rendement*) in preventing near-homonyms from 'collapsing' happened to be minimal (cf. the limited usefulness of

[22] The predisposition in favor of Martinet was strong even in an America whose tone-setting linguists, temporarily, were not known for exuberant xenophilia; cf. C. F. Hockett's temperate reaction, in *Lg.* 27.333–42 (1951), to Martinet's pamphlet, *Phonology as functional phonetics.* Predominant friendliness toward *Économie* pervades not only book reviews by critics differently oriented in their own research (e.g., H. M. Hoenigswald), but even conservatives; witness T. B. W. Reid's inaugural lecture, *Historical philology and linguistic science* (Oxford, 1960), cf. my remarks in *RomPh* 14.328–31 (1960–61). In the last ten years, however, the earlier enthusiasm has perceptively waned: G. C. Lepschy's acclaim of *Éléments* (1960) in *SSL* 2.123–37 (1962) gives way to a more sober stance in *Linguistics* 5.79–92 (1964) apropos of Martinet's somewhat repetitive *Functional view of language* (1962). Coming from Columbia, where Martinet spent the best years of his life, Erica C. García's skeptical voice (*RomPh* 20.543–549 [1966–67]), in assessing Martinet's *La linguistique synchronique* (1965) — a collection of loosely strung essays — is doubly thought-provoking. A certain defeatism seems to have engulfed the whole school; this is noted by N. Corbett in his major review article, "Reconstructing the diachronic phonology of Romance", to appear in Vol. 24 of *RomPh* (on the occasion of L. Romeo's dissertation, directed by Martinet's paladin E. Dorfman). And transformationalists reject Martinet's approach altogether, as follows from P. M. Postal's devastating remarks in *FoL* 2.151–86 (1966) on *Éléments*; cf. B. Saint-Jacques' attempt at a rebuttal (*ibid.* 3.294–98 [1967]).

the distinction, in French, between *un* /œ̃/ and *in* /ɛ̃/, or between /ɛ/, as in *faite*, and /ɛ̃/, as in *fête*). Clusters and presumable concatenations of sound changes — not just purely temporal sequences, as previously reconstructed by W. Meyer-Lübke (1908) and by that scholar's follower, Elise Richter (1934) — were the real gambits to watch closely on the chessboard of language history; and the recognition of 'empty cases or slots', which an intrinsic 'horror vacui', as it were, prompts speech communities to fill or otherwise to control, became the one desideratum most conspicuously associated with Martinet's dramatic clarion call for a rejuvenated diachronic linguistics.

From this point the French scholar, or his adherents, might have gone off, either simultaneously or consecutively, in several uncommonly rewarding directions. For one thing, they could have methodically inspected the rich stock of non-I-E languages (beyond the quick side-glance at Arabic and at Basque) in an effort to determine whether the histories of these less familiar tongues confirmed the theory to be tested or required its modification or else its total abandonment. A revised edition of *Économie* geared to such an ambitious program of checking against fresh sets of data would have ensured a distinctly longer lifespan to the (already obsolescent) book, which upon appearance aroused such optimistic expectations. Alternatively, Martinet and his following might have stayed within their favorite European hunting ground, but experimented with the extension of the principle of structural 'economy' in such adjacent territories, hitherto untrodden with this goal in mind, as inflection, derivation, syntax, lexicon, semantics, even poetics and stylistics. This they have failed to do on any appreciable scale,[23] though certain 'tightly organized' sections of the lexicon (kinship terms, anatomic terms, color terms, prepositions, personal pronouns, numerals, say) might superbly have lent themselves to a well-planned inspection; on systems of prepositions, moreover, a few structurally-minded scholars (the Dutchman C. de Boer, the Dane V. Brøndal) had already done some respectable spadework. A third bold advance that might have kept fellow scholars in a state of continued excitement would have enabled Martinet and his school to shake themselves loose from too close association — to the point of obsession — with the one overriding principle of 'economy' by raising the key question: what major rival forces are operative in language change — could it be striving for clarity through escape from ambiguity? or indulgence in playfulness?, and the like; then by pitting these diverse forces, after having measured their impact, against 'economy', so as to arrive, in the end, at a balanced view after having blended the isolable ingredients of causation. Such reorientation would, of course, have required, on the part of Martinet's group, an audacious veering-away from the Prague School's one-sided emphasis on Trubetzkoian phonology. Among his students only U. Weinreich could conceivably have

[23] In fairness to Martinet it must be stated that he made several attempts to strike out in new directions, including morphology, syntax, and lexicon, e.g.: "La notion de neutralisation dans la morphologie et le lexique", *TIL* 2.7–11 (1957), "De l'économie des formes du verbe en français parlé", *Studia philologica ... L. Spitzer* 309–26 (Berne, 1958), and "Elements of a functional syntax", *Word* 16.1–10 (1960). These (and related) gropings have so far failed to lead very far.

mustered the strength to perform this feat; but that promising scholar maneuvered instead in entirely unforeseen directions, which invite meaningful discussion in the context of trends in American, rather than European, linguistics.

I have dwelt on Martinet's writings in considerable — perhaps, disproportionate — detail for three unrelated reasons: first, because the author's ups and downs reflect quite faithfully the meteoric rise and the impending precipitate fall of 'classical diachronic phonology'; second, because these writings — in part through their intrinsic amenity and palatability, in part through the translation of several book-length ventures into an astounding number of languages — have popularized the approach on a global scale, making it, for a while, something of a fashion if not a fad;[24] and third, because Martinet, deliberately yanking himself loose from his early moorage to Germanics, made a point of striking the pose of a generalist unencumbered by philological mortgages.

In this he strongly differed from his closest peers. Jean Fourquet, to be sure, wrote a masterpiece of diachronic functional analysis, *Les mutations consonantiques du germanique; essai de position des problèmes* (1948), injecting new life into Grimm's Law; but he never ceased to be an active medievalist, assessing Wolfram von Eschenbach as a poet (1938), editing two romances by Hartmann von Aue (1944), writing an elementary book on German metrics (1936), and devoting his principal monograph to OHG word order (1938), all of which makes *Les mutations* and a handful of fine articles (I disregard his practical *Grammaire de l'allemand* [1952], aiming at the layman), at best, a slender superstructure or culmination of his œuvre, hardly its kernel.

Or take André G. Haudricourt, the co-author — with A. G. Juilland — of an *Essai pour une histoire structurale du phonétisme français* (Paris, 1949), whose appearance set off a real furor, not to say a 'querelle des anciens et des modernes' bordering on an intellectual scandal. Sensationalism apart, Haudricourt's share in this experiment looks almost like a seasonal 'divertissement' if one attempts to integrate it with that anthropologist's total output, dominated by such massive studies in material civilization as *L'homme et les plantes cultivées* (1943, with L. Hédin) and *L'homme et la charrue à travers le monde* (1955, with M. Delamarre). As a foil to fieldwork studies, including a monograph on two languages of New Caledonia (Auckland, 1963), and as a rest from issuing instructions to conduct fieldwork properly (*La notation des langues, phonétique*

[24] In this respect Martinet seems to hold something of a championship. A chunk of his tract, *Phonology as functional phonetics* (1949), appeared in Spanish translation in a Buenos Aires miscellany (1962). The *Économie des changements phonétiques* (1955) was wholly translated into Italian (1968), and Part I has been available in Russian ever since 1960. The *Éléments de linguistique générale* (1960) marks the crest of popular appeal, with a record of translations into German and Korean (1963), English and Portuguese (1964), Spanish (ca. 1965), and Italian (1966), the last-mentioned by G. Lepschy — a keen thinker in his own right and an almost unqualified admirer. Even *La linguistique synchronique* (1965) — a collection of, predominantly, earlier papers gently touched up which was lukewarmly received by critics — has successfully stormed the East German book market (1968). True, not all these writings bear on general diachronic theory; but in most of them a slice of diachrony, however slim, has been included, and their cumulative effect has been to increase the impact of *Économie*, which, for better or worse, remains the author's major original contribution.

et phonologique, 1967), a brief immersion in the (structuralized) history of one's tongue makes good sense. We are reminded of Benveniste's almost recreational return to French, in search of respite from hard labor on Hittite and Ossetic.

Different, but equally eloquent, was the case of the talented Orientalist J. Cantineau (b. 1899), to whom linguists at large owe — among other yeoman's services — a masterly translation (1949) of N. Trubetzkoy's *Grundzüge der Phonologie* (1938). This particular accomplishment, plus a few superb critiques (e.g., an incisive appraisal of Z. S. Harris' "Linguistic structure of Hebrew") and a handful of articles posthumously assembled in a Memorial (*Études de linguistique arabe*, 1960), may give the impression of concentration on structuralism, including its diachronic facet. But although Cantineau was an accomplished historian and philologist, even an epigrapher (witness his 2-vol. *Inventaires des inscriptions de Palmyre* [Beyrouth-Damas, 1930–49] and the grammatical quintessence of that survey: *Grammaire du palmyrénien épigraphique* [Le Caire, 1935]), his structuralism, perhaps as a result of his dialectological bent, was fundamentally synchronic, though the 'coupes horizontales' could relate to older as well as to present-day stages of the chosen varieties of Arabic; cf. such articles as "Esquisse d'une phonologie de l'arabe classique" (1946) as against "Réflexions sur la phonologie de l'arabe marocain" (1950) and "Analyse phonologique du parler d'El-Hâmma de Gabès" (1954). Incidentally, Cantineau's curiosity, within the Near Eastern realm, rarely transcended the confines of Arabic; a comparative study from his pen, such as "Le consonantisme sémitique" (1951–52), was something of an exception — all of which somewhat lessened his stature as a candidate for vigorous leadership in general diachronic linguistics. This dependence on the vicissitudes of a single language as a laboratory experience characterizes — and limits — even more strongly the probings of Martinet's followers from Spain, a country which, unlike France and Germany, lacks the tradition of comparatism (E. Alarcos Llorach, D. Catalán Menéndez-Pidal).

One legacy of the Prague School which has at all times hamstrung 'classical diachronic phonology' has been the close dependence of historical exploration on descriptive analysis. Diachrony, under such auspices, became a mere extension of synchrony; in the long view, even Jakobson and Martinet have had mere flurries of curiosity about how their views of structure — admittedly, less static, more dynamic than those of other descriptivists — might affect the theory, methods, and techniques of language history. This hierarchy of values was carried over into other environments; thus, one can observe how in E. Alarcos Llorach's *Fonología española* (*según el método de la escuela de Praga*) (Madrid, 1950) the chapter on diachrony was, at the start, merely a slim appendage to a guide to descriptive dissection; true, later editions (1954, 1961, 1968) contributed to the redressing of the imbalance. Similarly, of the 19 papers that make up the fairly bulky transactions of a symposium, *Problemas y principios del estructuralismo lingüístico* (Madrid: CSIC, 1967), only two (judging from S. Ullmann's informative digest: *MLR* 65.123–5 [1970]), namely B. Malmberg's (on the impoverishment vs. enrichment of systems through sound change) and a

slightly skeptical L. Michelena's (on structuralism and reconstruction), seem to be cross-temporally slanted. The situation might have been very different if more scholars primarily interested in patterns of change and only secondarily concerned with models of structure had, from the outset, joined the front-rank of modernists.

If we have, for the sake of convenience and in order to start with the almost self-explanatory polarization Brugmann/Meillet, selected French scholarship and its ramifications as the maneuvering ground for the structural reformers of diachronic linguistics (the intellectual ties between Paris, on the one hand, and, on the other, Oslo, Copenhagen, and the Slavic centers hardly require any elaboration), it does not obligatorily follow from our initial choice that alternative perspectives for the presentation of major trends were unavailable. Neither does the preferred projection of the sequence of events imply that at the current juncture the front line continues to run through France. Quite the contrary: for better or worse, the shock waves of general diachronic linguistics have no clearly identifiable epicenter. Not only have the spokesmen for the movement successfully recruited representatives of several nations and academic citadels, but an almost predictable distinctive feature of the entire 'school' has been the extreme mobility of its ranking members, achieved under varying conditions and for different purposes. In this astonishingly cosmopolitan group one easily recognizes a Russian long stationed in Czechoslovakia, later welcomed by Norway and Sweden, and eventually absorbed by the United States; a Swede with a record of advanced study and, later, a visiting professorship in Paris, research travel to Argentina and Paraguay, and occasional teaching performances in North America, etc. The biographic details have strictly anecdotal value and need not hold our attention. But the extreme mobility within the group, as regards both long-term residence and short-range academic commitments, is so striking a characteristic that it cannot be written off as irrelevant or coincidental. Perhaps in no other domain of linguistics — certainly neither in the philologically nor in the descriptively colored corners of the field — has such a degree of cross-fertilization occurred, both within Europe and on a global scale. It is therefore hazardous, at this point, to try to characterize any development confined to Western Europe: Benveniste, Kuryłowicz, Martinet, Hjelmslev, to cite just a handful of prominent names, have been distinctly European in background, outlook, and style of research, but all four have acquired strong followings on the other side of the Atlantic, among both transplanted younger Europeans and, even more remarkable, native Americans of unquestionable New World authenticity. Numerous members of this group, in striking and pleasing contrast to the majority of descriptivists, are citizens of the world able to speak, teach, and write effectively in a surprising variety of languages. This exceptional elasticity (and catholicity of taste) compensates for the numerical smallness of the group, increases smooth communication between its members, and thus enhances its chances of survival, despite numerous obstacles. The fluidity of the situation makes it possible for many long-overshadowed countries to break in with good prospects of prompt recognition. Examples can be most readily adduced from Eastern and Southeastern Europe, i.e., from countries

that are not under survey in this volume, but the recent *risorgimento* of Italy, perhaps best observable at Bologna, is worthy of mention: The special issue — just off the press — of the modernist journal *Lingua e stile* (Vol. 4/3 [1969]), devoted explicitly to diachronic structuralism, may serve as a barometer. In the German-speaking countries, where historicism is deeply entrenched, general diachronic linguistics — long viewed with a jaundiced eye as an intruder — may soon emerge as a splendid compromise between the native tradition, geared to the study of the concrete and the unique, and more abstract varieties of linguistic analysis, aimed at capturing the recurrent and the universal.

But if cosmopolitanism — a certain loosening of the restraints dividing traditions of research nationally anchored — has been a prime asset of both general diachronic linguistics and of particular historical linguistics rejuvenated by fresh thinking about fundamentals, then an unmistakable volatility of enthusiasm has been one of the diachronists' chief liabilities. As one examines, through the bio-bibliographies of representative scholars, the individual 'curves of allegiance', as it were, one discovers all too often a certain fleeting, episodic quality about each convert's espousal of this cause. While it is, clearly, every seasoned scholar's own business to decide how long he is to persist in the advocacy of a certain doctrine or practice, the cumulative effect of so many ephemeral surrenders to fascination, followed by long periods of indifference, disenchantment, or virtual defection, has by now become a negative characteristic of the entire 'movement'. While there may be nothing objectionable, in each individual case history, about such rhythmic alternation of ecstasy and apathy, an impartial observer cannot help musing that truly 'ripe fruits' — like those that are bound to fall not infrequently into the lap of, say, an etymologist after many years of tense expectation — have not yet been harvested in the subdiscipline under study, not least on account of this pervasive inconstancy of taste.

It is not at all difficult to array telling examples, though it might be presumptuous for anyone to attempt to sit in judgment over distinguished colleagues or, worse, to guess at their motivations. Hence, the few illustrations I shall cite forthwith serve the sole purpose of documenting a trend, or rather of disclosing a no longer concealable peculiarity of that trend. In France, G. Gougenheim, one of the earliest supporters of the 'new phonology' (inured as he was, through earlier exposure to J. Gilliéron's glottodynamic teaching, against any excess of abstractionism), before long reverted to historical syntax and lexicology, set in a more traditional key. In Italy, G. Devoto and G. Bonfante, for a while attracted by the sweep and originality of Prague-style structuralism, at no time succumbed completely to its lure and in the last two decades perceptibly moved away from its center; G. Contini engaged in one experiment along this line (apropos the devoicing of Old Spanish sibilants), then resolutely pulled out, plunging back into his highly successful literary inquiries. In Germany, the young and dashing H. Lausberg astonished a chorus of stale Romanists by pressing into service bold structural analysis to account for a newly discovered family of Lucanian dialects (1939), then extended the approach to pan-Romanic proportions (1946), but in the

end, surprisingly, withdrew from the fray to become engrossed with medieval rhetoric. His younger compatriot — and, I suppose, disciple — H. Weinrich, after producing a major stir with a highly original book on diachronic phonology applied to a wealth of Romance dialects, lost no time in making a gambit which in the opinion of so subtle a critic as K. Togeby marked an evasive move in the general direction of literary, as against linguistic, analysis. Trajectories so curved can easily be multiplied. Counterexamples of steadfast dedication to diachronic structuralism can also be adduced — the Swede B. Malmberg, for one, has been loyal to his favorite approach for over thirty years, achieving a modicum of variety through a kind of rotation between (a) French (medieval and modern), (b) New World Spanish, and (c) general linguistics devoid of narrower classification. But though such counterexamples command respect and arouse curiosity, they are few and atypical: the dominant pattern has been one of flurries of interest, not to say of infatuations.[25]

[25] In the case of G. Gougenheim — who, except as an assiduous book reviewer for the *BSL*, prefers not to exceed the bounds of French — the war years seem to mark the sharp divide between an initially warm response to structuralism (with emphasis on phonology) and the later recoil from it (punctuated by a return to historically tilted syntax and lexicology). The former preference is recognizable in the author's contribution to the Trubetzkoy Memorial in *TCLP* 8 (1939), the latter, in the — quite unequivocally titled — collection of etymological etchings, *Les mots français dans l'histoire et dans la vie*, 2 vols. (Paris, 1962–66). One discerns a sort of transition in Gougenheim's possibly best-known work: *Système grammatical de la langue française; manuel de morphologie et de syntaxe descriptives* (1939), which was synchronic, but steered clear of commitment to phonology (at that point a token of independence), and his later study of 16th-century French, which was again synchronic, but focused on an earlier stage and thus recaptured a scintilla of historicism.

Devoto, a staunch individualist, has neither bothered to become a member of any school nor to found one and has probably, as a theorist, displayed a maximum of originality in his approach to stylistics, witness his *Nuovi studi di stilistica* (Firenze, 1962). Far more impressive as a refined, aristocratic practitioner, he has, all told, shown a development away from the abstract and universal, toward the concrete and unique, a direction which parallels the shift of his attention from Indo-European to Romance (particularly to his native Italian, viewed at several cut-off points) and which likewise harmonizes with a gradual retreat from grammar, for the sake of concentration on style and, increasingly, on lexicology (witness his two recent dictionaries of Italian and the earlier booklet on the history of lexicography). It was in the 'thirties rather than in the 'sixties that Devoto was, on balance, closest to joining the ranks of theorists of diachrony. (Note that one of his students — traceable to that decade — is H. M. Hoenigswald.)

G. Bonfante, during the twelve or so years of his stay in the United States, became known as an articulate (occasionally, strident) spokesman for M. Bartoli's neolinguistics. But he also acknowledged his very heavy debt to A. Meillet, and at least temporarily established a rapport with the humanistically tolerant wing of structuralism. Thus, his — possibly most ambitious — paper, "On reconstruction and linguistic method", *Word* 1.83–94, 132–161 (1945); 2.155–156 (1946), is, significantly, dedicated to R. Jakobson.

G. Contini's structuralist analysis of shifts in the Old Spanish consonant system, not unlike C. Segre's concern with C. Bally's 'Genevan' method (cf. F. M. Jenkins in *RomPh* 19.58–68 [1965–66]), illustrates, above all, these two brilliant literary critics and historians' immense versatility, which occasionally bids them to exceed, for experiment's sake, their customary hunting grounds, to which — so far — they have thereafter dutifully returned.

Very much in contrast to his direct teacher (and mentor in dialectology) G. Rohlfs, who has shown himself persistently and pathetically impervious to any fresh breeze of modern thinking about language, H. Lausberg, from the start of his career, adopted a pleasingly open-minded attitude toward 'Prague-style phonology', e.g. in his sparkling doctoral thesis on the dialects of Lucania (1939) and in two much-discussed, wider-ranging papers published shortly after the war; but in his prime

One interesting side-issue invites a comparable dosage of caution or restraint on the part of the chronicler: As soon as scholars long immersed in 'conventional' spatio-temporal studies of particular languages decide to switch to general linguistics, they typically bypass the chance at reconciliation offered to them by a broad-gauged diachronic linguistics and go all the way to straight descriptivism. It may be the case that, concern with synchrony being the far more characteristic facet of 'modernism', such radical reorientation more aptly dramatizes a no doubt painful break with the scholar's own academic past. Alternatively, it may be true, at least in marginal cases, that their earlier training and supervised research convinced them of the sterility of an overrefined, finicky historicism — which they were condemned to watch in the concluding phase of an inescapable cycle —, thus producing among them a feeling of surfeit or frustration. Whatever the psychological radix of each private decision, the results of such a leap have rarely been satisfactory; and widespread recognition, in the ranks of the hard-core generalists, has seldom ensued as a coveted reward. B. Pottier's earlier expertise in Old Aragonese lexicography as well as in Spanish and French historical grammar and even in the *Wörter-und-Sachen* approach applied to one sector of Romance culture has, one suspects, gone to waste, so to speak, in his new descriptive studies aiming at an entirely too steep level of universality, incom-

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of life, apart from refusing to confine himself to linguistics (not for nothing did he, after E. R. Curtius' death in 1960, become Central Europe's ranking exegete of medieval rhetoric), he spurned one-sidedness and asserted his individuality by refraining from casting all of Romance linguistics into the mold of a dogmatic structuralism (*Romanische Sprachwissenschaft*, available in at least two editions and quite recently translated into Spanish and Italian).

H. Weinrich — a carefully groomed student of Lausberg's — was perhaps the one talented younger scholar in Europe who could be expected to blend or, at least, imaginatively weld historical comparatism, dialectology, and structural analysis into something new and truly original. Many benevolent observers pinned their hopes on the impact of his first major work, *Phonologische Studien zur romanischen Sprachgeschichte* (*FRPh* 6; Münster, 1958); even an independent critic of K. Togeby's stature, who showed skepticism vis-à-vis the author's (and his school's) appeal to 'phonologisches Sprachbewusstsein' and took stock far more generously in external causation, including diffusion, praised Weinrich's ability to treat jointly the implications of quantity in vowels and consonants (and, in so doing, to transcend the limitations of H. Lüdtke); see the Danish scholar's powerful review article, "Les explications phonologiques historiques sont-elles possibles?", *RomPh* 13.401–13 (1959–60). But the same critic, a few years later, took a far sterner view of Weinrich's next book, *Tempus; besprochene und erzählte Welt* (Stuttgart, 1964), recognizing in it a downright retreat from linguistics proper and declaring: 'W. veut nous faire croire qu'il fait de la grammaire, alors qu'il fait en réalité une étude littéraire .... Cette erreur mène l'auteur à traiter d'une manière injuste les problèmes grammaticaux' (*RomPh* 19.596–9, at 597 [1965–66]).

B. Malmberg, after his initial weaning-away from a fairly conservative tradition of Romance philology and his conversion to structuralism — an abrupt veering somewhat reminiscent of G.L. Trager's sharp reorientation in this country, perhaps five years earlier — became a loyal 'general practitioner' of the new linguistics, with interest rather evenly divided between the history of the discipline, phonetics and phonemics, information theory, and, with special reference to New World Spanish, a strongly personal variety of sociolinguistics. His favorite medium for testing diachronic phonemics (into which, not unlike E. Alarcos Llorach, he was initiated mainly by Martinet) has remained Old French — the last remnant, one suspects, of his first love. For an attempt at a stereoscopic assessment, from different angles, of this scholar — widely traveled, but at no time severed from his comfortable operational base in Sweden — see *CTL* 4.169, 176 (1968) and *RomPh* 22.559–61 (1968–69); also Margaret Langdon's separate comments, *ibid.* 571–2.

mensurate with his narrow range of first-hand experience. Herculano de Carvalho may perform a commendable service to his charges at Coimbra by acquainting them, within a conservative environment, with the tenets of structuralism; but outside the chosen local scene, his earlier research in the Jabergian vein, esp. the splendid book on the names of the flail, seemed somehow livelier and more original.[26] Just how it is possible to strike a balance between research in a culturally — even humanistically — saturated dialect geography and devotion to modernist linguistic theory was persuasively demonstrated by the late Uriel Weinreich. But though Weinreich's European background was doubtless a powerful determinant of the ambit and style of his probings, his firm station in American intellectual life counsels us not to expatiate here on his imaginative answer to the dilemma.

This baffling situation becomes clearer if one recalls that in some European countries, throughout the 'forties and 'fifties, the endorsement of modernism virtually connotated divorce from any serious preoccupation with diachronic soundings. Possibly the most pathetic picture emerged in England, specifically in the London nerve center, where there crystallized a respectable school of home-grown descriptivism whose most conspicuous characteristic, of all possible idiosyncrasies, has been, in retrospect, the lack of any diachronically-oriented counterpart of comparable substance.[27] This does not mean that historical linguists were totally absent from the

[26] A long and perhaps tortuous road separates B. Pottier's juvenilia — painstakingly collected and assorted lexical pebbles from which, unluckily, there emerged no inordinately arresting mosaic (witness, in the late 'forties, his competent, but less than exciting, glossary of Old Aragonese words extracted from M. Serrano y Sanz's inventories or, in the late 'fifties, his, again, competent but disappointingly microscopic comments on J. Corominas' controversial etymological dictionary of Spanish) — from such a major monograph as *Systématique des éléments de relation; étude de morpho-syntaxe structurale romane* (Paris dissertation, 1962), which, at least, respects the bounds of Romance scholarship on the factual side, or as the later and distinctly slimmer *Présentation de la linguistique; fondements d'une théorie* (Paris, 1967), with the umbilical cord to the earlier specialty completely cut (for a parallel development in this country cf. A. Juilland and many others). One could have hoped that the volume promisingly titled *Lingüistica moderna y filología hispánica* (Madrid, 1968) might enlighten the reader on the doubtless heavy gains scored and the perhaps equally heavy losses sustained in switching from one allegiance to another; but, deceptively enough, the volume is a mere collection of disjointed articles written in two entirely different keys and the author makes no clearly visible attempt to justify in retrospect his espousal of a new creed.

J.G. Herculano de Carvalho's far and away best and most ambitious work, on the names of the flail, esp. in Portuguese, is unmistakably in the old key, echoing H. Schuchardt and K. Jaberg (see my rev. in *Lg.* 33.54–76 [1957] and the chapter "Words, objects, images" in *Essays on linguistic themes* 281–310 [Oxford, 1968]). He has assembled his shorter essays in two volumes, jointly titled *Estudos linguísticos*. The first mirrors predominantly his spatio-temporal, the second and more recent (1969) preeminently his structural curiosity, but one misses once more a bridge for smooth transition or, better still, a common denominator, except in an occasional paper such as "Sincronia e diacronia nos sistemas vocálicos do crioulo caboverdiano" (5–31).

[27] This — unfortunately negative — characteristic of the London School, its almost stubborn neglect of the diachronic axis, has been brought out quite dramatically by Erica C. García in her delayed, substantial review (slated for publication in *RomPh*) of the miscellany, *In memory of J.R. Firth*, edited by C.E. Bazell, J.C. Catford, M.A.K. Halliday, and R.H. Robins (London, 1966). And a critic with a flair for the diachronically relevant as keen as W.P. Lehmann has found nothing worthy of elaboration along that line in reporting in almost lavish detail, for the readers of the same journal, on D.T. Langendoen's M.I.T.-inspired research monograph, *The London School of linguistics; a study*

English scene, or that the few that survived were all parochially over-specialized conservatives. Far from it; we see at work a W.S. Allen, an all-round paleo-Indo-Europeanist with heightened expertise in the three 'classical' languages (Sanskrit, Greek, Latin); an R.H. Robins, competent not only in historical linguistics but, also, into the bargain, in the history of linguistics, and in one Amerindian language to boot; and, somewhat later, coming from the Romance wing, a Rebecca Posner, exposed to general linguistics in Paris and at Yale — after an austerely traditional, philological apprenticeship at Oxford.[28] But the handful of progressive British diachronists try to reconcile the solid knowledge that one can afford to acquire from Brugmann, from Saussure, from L. Bloomfield with the refreshingly new ideas emanating from the jubilant headquarters of descriptivists, whether stationed in their country or abroad. They do not yet — certainly not before the mid-'sixties — show any readiness to gamble on the historians' ability to stage a revolution with their own superb stock of data, their private arsenal of furbished weapons, and, above all, their own brain-

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of the linguistic theories of B. Malinowski and J.R. Firth (Cambridge, Mass., 1968). While P.H. Matthews' illumination of these issues — notably of Firth's thinking about 'prosodic or polysystemic phonology', 'context of situation', and 'collocability' — commands attention, as would the view of a qualified insider (*Lg.* 44.306–17 [1968]), and while he identifies, not least in the attached bibliography, certain thin threads leading from Firth's classroom to certain marginal writings of historically and philologically trained linguists, such as Allen and Robins, even he insists, again and again, on the chosen School's extra-heavy commitment to description.

[28] Most of W. Sidney Allen's monographic studies bear either on Indics or on Greek and Latin, against the background of heightened alertness to general problems of I-E reconstruction. As regards his credo and the assumptions underlying his technical work, one finds valuable hints in his two weighty reviews of 'Americana': H.M. Hoenigswald, *Language change and linguistic reconstruction* (1960) and W. P. Lehmann, *Historical linguistics: An introduction* (1962); see *RomPh* 14.153–9 (1960–61) and 17.170–5 (1963–64), respectively. In the former piece, the point to watch is the critic's network of references to Trubetzkoy, Martinet, and their comrades-in-arms; in the latter item, one cannot help noticing his championship of the neogrammatical distinction between physical and physiological processes. Allen is, then, a level-headed moderator, a balanced middle-of-the-road man, eager to salvage as much as possible of the past century's classic comparatism and to inject just a few drops of modernism, for the sake of their leavening or flavoring effect. Cautious modernization within the system rather than bold rebellion against it also marks Allen's didactically biased *Vox Graeca: a guide to the pronunciation of Classical Greek* (Cambridge, 1968), which calls up memories of E.H. Sturtevant.

While Robins, in his recent textbooks, has striven to be impartial, close reading discloses, unavoidably, some of his private leanings. This has been pointed out in several — on the whole, favorable — reviews; note, among others, F.P. Dinneen's appraisal, in *GL* 8.97–101 (1968), of *A short history of linguistics* (Bloomington & London, 1967).

Rebecca Posner's position may best be described as an uneasy equilibrium between respectable competence in traditional Romance scholarship (whose trademark, as she sees it, is honest drudgery) and enthusiasm about the breath-taking flights of imagination afforded by several brands of modernism, among which she seems to favor none very strongly over the others. One can follow her gropings, throughout the 'sixties, by examining her major monographic venture (on consonant dissimilation in Romance); the lively introductory volume in which she addresses herself to laymen (*The Romance languages: A linguistic introduction* [Garden City, N.Y., 1966]), which — for my taste, at least — J.R. Craddock has judged humorlessly and, as a result, far too harshly (*Lg.* 44.621–5 [1968]); plus her entertaining experiment with one chapter of the history of linguistics — "Thirty years on", appended, by way of revision, to I. Iordan and J. Orr, *An introduction to Romance linguistics* (Oxford, 1970); in addition to a dozen or so scintillating reviews and review articles.

power. (Across the Ocean, Bloomfield, in 1933, adopted a by no means different stance, welding on an excellent, but staunchly conservative treatment of historical linguistics to an explosively innovative presentation of descriptive techniques; and his most faithful heir and disciple, C. H. Hockett, tilted the edifice of American linguistics even farther in the two directions of descriptive experimentation and historical staleness, if not dogmatism, both in his ill-fated book of 1958 and in his worse-fated Presidential Address of 1964.) Even in Switzerland, on Saussure's homeground, we find a puzzling cleavage between commitment to structuralism — with a minimum of attention to history — in the French sector and enthusiasm about historical reconstruction — almost unalleviated by any contagion with the structural 'heresy' — in the Alemannic sector.[39]

If this is true, then it can perhaps be argued that the best-qualified pioneers and trend-setters for a future rebirth of general diachronic linguistics on the European scene may be recruited from among that small minority of scholars who have been open-minded to modernist thought, fiercely independent and non-gregarious in formulating their theoretical positions; and who have refused to allow the novelty of modish styling and appeal to sweep them off their feet. In other words, it seems to take malleable, thoroughly experienced, and strongly individualistic scholars these days to withstand the many temptations that lure away young minds in other, less encumbered directions. By the same token, it is difficult to imagine how such strong-profiled personalities could be persuaded to form a group, still less a block; while their pronounced individualism enhances the value, even the charm, of their work, it also hampers their freedom to engage in joint, concerted actions or projects, of the type managerially most successful in the late 20th century. Rugged individualists such as Nice's P. Guiraud — vitally concerned with the impact of statistics on language study, but also interested in poetics, in phonosymbolism, in etymology; or Copenhagen's K. Togeby — a level-headed observer of and participant in many shades of modernism — who has at his ready command several 'registers' of legitimate linguistic research, as it were (starting with glossematics, beside time-honored comparatism); or Tübingen's E. Coseriu, who has lived — and has found leisure to reflect — in many climates, from the shore of the Black Sea to the estuary of the La Plata river, and has accumulated theoretical studies, etymological vignettes, monographs bearing on cultural morphology — these are some of the scholars elastic enough to see rapidly changing

[39] Conceivably the most eloquent illustration is offered by the latter-day Geneva School: while Saussure recognized the equal legitimacy of the horizontal and the vertical plane, it was his forceful rehabilitation of the former that impressed his followers almost exclusively. The result was a new imbalance, this time tilted in the reverse direction. Even where the master's adherents mustered sufficient competence in, say, Old French to teach and capsulize historical grammar in conventional surveys (as was true of A. Sèchehaye) or to handle medieval texts with philological deftness (this remark applies to C. de Boer), they would consistently choose contemporary French and Italian for their experimental work in pure linguistics. The tacit equation of 'progressive, advanced, modern-style' with 'descriptive, synchronic' has, by and large, also presided over the *CFS* since the inception of that periodical.

fashions in an interesting perspective and original enough to scotch the baneful downward movement of diachronic linguistics.[30]

III

It would be tempting to present a counterview of the entire field of general diachronic linguistics by examining the work already accomplished or still in process throughout Western Europe in terms not of 'schools and scholars', but of actual problems and perspectives. What can here be sketchily crowded into a few pages is even less than a modest beginning.

[30] The case of K. Togeby is particularly remarkable, either because that Danish scholar was, at the start, misjudged by qualified observers and talent scouts, or because he later grew in stature and disclosed abilities previously concealed, or due to the interplay of these two factors. The original edition (1951) of his *Structure immanente de la langue française* (Copenhagen, 1951), plus some chronicles of current research (e.g., the one that appeared over his signature in the *RLR* shortly after the journal's post-war revival) gave the impression of stemming from an out-and-out orthodox follower of Hjelmslev's then hotly debated glossematics, an acolyte overcommitted to descriptivism. In his harsh appraisal of *Structure*, Martinet excoriated the young author for his infatuation with a quasi-mathematical approach to language and his neglect of realism (*Word* 9.78–82 [1953]); A. Juilland's parallel review, while a shade less devastating, was also acerbic. But Togeby bounced back and, in fact, became far more of a realist than his critics demanded; in his programmatic piece, "Désorganisation et réorganisation dans l'histoire des langues romanes" — published, ironically, in a testimonial volume for Martinet (*Estructuralismo e historia* 1.277–87 [Tenerife, 1957]), he recognizes a pattern of alternation between chaos, produced by an irruption of outside forces, and the reintroduction of a semblance of order from within the menaced speech community. A few years later, Togeby wrote a position paper on the theory — and art — of manufacturing a historical grammar ("Comment écrire une grammaire historique des langues romanes?", *SNPh* 34.315–20 [1962]) and, almost simultaneously, paid a tribute to areal linguistics — far more in the tradition of K. Sandfeld (another revered teacher) than of Hjelmslev: "L'infinitif dans les langues balkaniques", *RomPh* 15.221–33 (1961–62), with full attention to Bulgarian, Modern Greek, and Albanian. Despite his continued loyalty to the memory of Hjelmslev — as shown by the revision of *Structure* (1965) and by the stewardship of a small anthology: *La glossématique: L'héritage de Hjelmslev au Danemark* (Paris, 1967; = *Langages*, No. 6), Togeby has evolved into an entirely independent, engagingly many-sided figure; cf. the recent collection of his shorter papers: *Immanence et structure — recueil d'articles publiés à l'occasion du cinquantième anniversaire de ...* (Copenhague, 1968; *RRom* Special Issue 2), and Martha Garret Worthington's perceptive review article, "Immanence as principle", *RomPh* 24.488–505 (1970–71).

E. Coseriu's early upbringing in cosmopolitan Rumania and subsequent apprenticeship at three Italian universities made him a citizen of the world even before his transfer to Uruguay (1951–63) and eventual return to Europe, where he at present occupies a chair at Tübingen. In Montevideo he issued a number of tracts assessing, in a critical vein, the broadest concepts of general linguistics, e.g. *Sistema, norma y habla* (1952); *Forma y sustancia en los sonidos del lenguaje* (1956); *Logicismo y antilogicismo en la gramática* (1957). It is this philosophical bent of his mind, plus his wide readings, that attracted the attention of many critics to his most ambitious, book-sized venture of that decade, *Sincronía, diacronía e historia; el problema del cambio lingüístico* (1958), translated into Russian for inclusion in Zvegincev's reader (1963) and reviewed in several media — in America by F. Jungemann, *MLN* 75.93–96, and by K. Togeby, *RomPh* 14.159–62 (1960–61) — on the whole, very favorably despite some dissent on the crucial issue of causation; note also a full-blown article on Coseriu's studies by N.C.W. Spence, "Towards a new synthesis in linguistics", *ArchL* 12.1–34 (1960). While Coseriu's temporary connection with the Spanish-speaking sector of the world of linguistic scholar-

Two preliminary remarks. First: although diachrony, by definition, involves concern with temporal shifts, the enormous literature on the human apperception and projection of the passage of time (with special reference to aspects, *Aktionsarten*, tenses, and the like) is almost invariably synchronic.[31] Paradoxically, most scholars thus oriented have so far themselves abstained from moving along the time axis in observing human reactions to time. Second: while for over a century comparative-historical was almost a stereotyped compound in the academic jargon, the two members of this once obligatory alliance have of late shown symptoms of increasing independence. Historical excavation without the benefit of comparison with congeners is, of course, best exemplified by 'internal reconstruction'. Typologically flavored comparison, without any immediate or ulterior preoccupation with genetic reconstruction,[32] is almost the order of the day (although residual concern with the time-honored

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ship has appropriately culminated in a collection of articles: *Teoría del lenguaje y lingüística general: cinco estudios* (Madrid, 1961; 2nd ed., 1967), his return to Europe and use of vehicles of communication other than Spanish will undoubtedly strengthen his influence in years to come. Interesting and praiseworthy within the context of this survey is the fact that Coseriu continues to explore 'burning' theoretical issues, e.g. diachronic structural semantics, "Pour une sémantique diachronique structurale", *TLL* 2/1.139–86 (1964), yet at the same time does not spurn occasional opportunities to plunge into etymology (as in *NRFH*'s Alfonso Reyes Memorial) or to engage in 'comparative European syntax', cf. "*Tomo y me voy*; ein Problem vergleichender europäischer Syntax", *VR* 25.13–55 (1966). I leave open the wisdom of Coseriu's recent contention that he not only preceded the generative-transformational linguists, but offered superior solutions along their line of thinking (see the — slightly disconcerting — concluding pages of his otherwise less skewed report, "General perspectives", in *CTL* 4.5–62).

For the discussion of P. Guiraud's far-flung œuvre the reader is referred to R. Posner's survey "Thirty years on" (447–51) and to my own section on "Comparative Romance Linguistics" in this volume.

[31] As is well known, the last decade has witnessed the production of a spate of monographs on 'linguistic time' and on systems of tenses (paralleling an equally copious output of studies on 'literary time'). Some of the authors — from both sides of the Atlantic — who have become locked in this controversy are É. Benveniste, W. E. Bull, K. Heger, G. Hilty, A. Klum, M. Sandmann, H. Weinrich. At least one of Benveniste's relevant papers (1968) is, as one would expect, diachronically slanted, but most of the other scholars have elected to move in the synchronic groove.

[32] Not only has historical projection become a non-obligatory companion piece of comparison in recent years, but comparative monographs are preferably so delimited and slanted as, literally, to preclude or to discourage point-by-point reconstructions of trajectories. It has become fashionable, in Europe and Asia no less than in North America, to group together for such purposes unrelated or not too closely related languages. Occasionally this departure from earlier practice gives the analyst the coveted chance to place alongside the languages which he has been trained to approach from outside the one language familiar to him from introspection; cf. E. Mikkola, *Das Kompositum*, I; *eine vergleichende Studie über die Wortzusammensetzung im Finnischen und in den indogermanischen Sprachen* (Helsinki and Leiden, 1967). For the pragmatically oriented doctoral candidate this arrangement carries with it the advantage that he no longer need concern himself with 'obscure' (i.e., median and minor) languages within the family of his choice (say, Slavic, Germanic, or Romance), but is free to select for leisurely inspection just the truly 'useful' languages, in cross-family arrays. Cf. the ambits of these two 1966 dissertations accepted by Tübingen: Gerd Howey, *Das EGO-HINC-NUNC System der subjektiven Orientierung, dargestellt am Gebrauch der Demonstrativa in den romanischen Sprachen, im Deutschen und im Englischen*, and H. Schmidt, *Studien über modale Ausdrücke der Notwendigkeit und ihrer Verneinungen; ein Übersetzungsvergleich in vier europäischen Sprachen*. We see here younger scholars at work exploring, if not approaching, the concept of Standard Average European, familiar

alliance of historicism and comparatism has not entirely disappeared[33] and may be reactivated any day). Undoubtedly, involvement in both sophisticated translation and gross (machine) translation has greatly favored comparative research of other than historical motivation.[34]

On the positive side of the ledger, one could set off:

(a) Studies in theory and practice of RECONSTRUCTION and PREDICTION, with full awareness of varying degrees of probability and with application to all manner of *Ursprachen* and substrata;

(b) Redefinition of the LINKS posited between successive stages: laws or rules vs. mere trends of change. These discussions frequently take into account such related problems as: pressure of society, margin of free choice enjoyed by the individual, the speaker's awareness of changes and choices;

(c) Inquiries into language development viewed in relation to other types of evolution, as identified by history, sociology, anthropology, paleontology (and paleobotany), and the inorganic earth sciences; one favorite theme is ethnogenesis vs. glottogenesis;

(d) Research in varieties, causations, and projections of language change — the hard core of diachronic linguistics. One notes certain shifts of emphasis, e.g., less attention paid to evolution vs. diffusion (a long-dominant theme) and more attention paid to the boundary between phonology and morphology as well as to movements, in both directions, across that crucially important border-line;

(e) Probings of the interlocking (W. von Wartburg's 'Ineinandergreifen') of structure and change and, concomitantly, of descriptive and historical analyses. The nuanced view of structure, with increased attention to degrees of tightness vs. looseness, to central vs. peripheral sectors, to integrated vs. isolated ingredients, to charac-

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to Americans from the writings of Benjamin Lee Whorf. The final point of this development is, of course, to sample maximally-differentiated languages in search of their speakers' — on the surface, normally diversified — reactions to a single type of challenge.

[33] Some fine scholars in Western Europe and elsewhere have, needless to say, never ceased to cultivate the time-honored (and still richly rewarding) historical-comparative approach — without, as a rule, making a fetish of the 'purism' of a Brugmann or a Meillet. If O. Szemerényi ordinarily typifies classical pan-IE comparatism — in monographs such as *Syncope in Greek and Indo-European and the nature of Indo-European accent* (Napoli, 1964) and in papers like "The new look of Indo-European; reconstruction and typology", *Phonetica* 17.65–99 (1967) — he has occasionally been seduced, in assessing studies of substratologists, to exceed by a wide margin these self-imposed limits.

[34] There is no need to survey here the enormous literature, of recent or fairly recent vintage, on the theory and practice of translation (several symposia and miscellanies, monographs by J.C. Catford, G. Mounin, E.A. Nida, a bulky Columbia dissertation [apparently unpublished] by S.N. Weissman [1965], and even a book-length study, by W. Sdun [München, 1967], of the problems and theories of translation as they have emerged over two centuries). There exists a large number of narrower, more specific disquisitions, e.g. on experiences in translating into German from Turkish and Hungarian (B. Fischmuth, 1967), or from German into Spanish (D. Pajares Márquez). The one monograph straddling comparatism and analysis of literary translation, i.e., the combination we are here concerned with, seems to be R. Kloepfer, *Die Theorie der literarischen Übersetzung; romanisch-deutscher Sprachbereich* (München, 1967).

teristic vs. exceptional features, is of itself conducive to a smooth transition to historical formulations and to the quest for causation;

(f) The grouping and delineation of language families (with equal attention to their distance from the hypothetical *Ursprache* and, wherever applicable, to their mutual intercourse); and study of the alliances of dialects, seen in their relation to the respective standard languages;

(g) Quest for the universals — tendential or neatly isolable — of language change, as distinct from the particulars of local conditions;

(h) Application of such bifocal disciplines as bio-, ethno-, psycho-, and sociolinguistics to broad problems of language change (e.g., the effects of bi- and plurilingualism; also, lessons to be learned by the language historian from the generation gap between the speech of parents and that of very young children, and the like).

If one depends on the guidance of bibliographies and even of less than detailed abstracts (as practically everybody is forced to do these days), there arise two additional complications. The general inflationary curve so characteristic of modern Western culture and the various demands, pressures, and temptations induce us all, in varying degrees, to overstate our respective cases. If a 19th-century journal programmatically confined to, say, Germanics published an article laconically titled "Metaphony" or "Consonant dissimilation" or "Binomials", then there was at least a contextual limitation to a given family of languages. But the use of comparably wide-meshed titles in the 20th-century journals of general linguistics is, as a rule, grossly misleading as to the range of the author's actual competence or to so much as his sheer curiosity. Conversely, countless nuggets of knowledge potentially very useful to the generalist lie buried in highly specialized, prohibitively narrow-titled inquiries, and the salvaging of these nuggets proceeds, to this day, quite haphazardly and unhurriedly. As a result, the promises held out by bibliographies for those in quest of a general diachrony are now excessively big, now discouragingly small, and almost invariably disappointing.

Perhaps the future answer lies, wholly or at least in part, in well-organized group projects, headed by forceful yet elastic leaders. One example in point might conceivably be the study of cultural diffusion, as illustrated with lexical borrowings. This kind of spatio-temporal investigation, in which the route of every word and every name suspected of foreign extraction — or of reassignment along the social axis — must be followed on carefully plotted charts, with meticulous attention to the real-world (or mythological) correlates of the given lexical and onomastic units, is exceedingly time-consuming. In fact, one may contend without malice that the establishment of a flawless philological corpus consumes, as a rule, more energy than does, at the concluding stage, the purely linguistic analysis. As a result of such a heavy commitment to documentation, some of these studies involve life-time projects and, if successful, benefit — by way of reward, as it were — not linguists alone. Scholars with a knack for this kind of complete immersion in a remote cultural context — an Eva Fiesel as the author of the narrow-gauged monograph *Namen des griechischen*

Mythos im Etruskischen (1928), a C. de Simone as the writer of the broader-gauged *Die griechischen Entlehnungen im Etruskischen*, I: *Einleitung und Quellen* (Wiesbaden, 1968)[35] — will not be so easily persuaded to rush into the writing of a 'broad synthesis' on the process of lexical borrowing. And when, by way of contrast, a younger, inexperienced scholar yields to the temptation of delivering such a synthesis — as did L. Deroy in his Liège dissertation *L'emprunt linguistique* (Paris, 1956) — then the danger of a rather superficial, unoriginal survey, of a mere compilation, becomes quite acute.[36]

The outstanding example of 'interlocking' between synchrony and diachrony is the coexistence of semi-autonomous subsystems — once historically stratified — within a single language, at a given juncture. Thus, in the 16th and the 17th centuries the numerous Arabisms that had been gradually absorbed into standard Spanish were still recognized by alert, articulate observers as a separate ingredient of the lexicon, in much the same way as an average citizen can pick out Irish and Italian family names from a typical American telephone directory. The classic illustration of the use imaginative speakers and writers may make of a stock of doublets (i.e., pairs of native and borrowed variants of the same words) available to them was furnished a generation ago by A. Paschen in regard to Old Church Slavic words and their Old Russian congeners, as subtly differentiated in Medieval Russian usage.[37] Very similar situations prevailed in the cases of Sanskrit elements in Dravidian, of Arabic elements in Persian, of (unassimilated, 'learned') Latinisms in Romance, of Graeco-Latin or older French words in Middle and Modern English, etc., and the cultural climate of today's Western Europe is ideally suited to produce scholars to identify and analyze the recurrent, universal features of such contexts.

[35] I am guided here by K. Olzscha's eulogistic review of De Simone's book in *IF* 74.332–6 (1969), preceded (321–32) by the Italian scholar's own appraisal of H. Rix's monograph, *Das etruskische Cognomen*.

[36] As regards critical reactions, the unmitigated severity of É. Benveniste in *BSL* 54/2.47–8 (1959) is even more noteworthy than the unrepressed disappointment of a distinctly younger French admirer of U. Weinreich, namely G. Mounin, *Word* 15.360–2 (1959). For other appraisals by better-known reviewers see G. Bonfante, *Paideia* 13.116–9 (1958); A. Carnoy, *AC* 26.492–3 (1957); A. Goosse, *RBPh* 39.853–5 (1961); A. V. Isačenko, *ZPhon* 11.266–8 (1958[–60]); É. Legros, *BCTD* 32.286–7 (1958); S. Newman, *RPh* 13.342–3 (1959–60); W. P. Schmid, *IF* 64.78–82 (1958); A. Tovar, *Em* 26.147–8 (1958); and L. Zgusta, *AO* 27.685–6 (1959). The bibliography alone in Deroy's book runs to 77 pages! Is it surprising that — to avoid embarrassment — many European language historians, who, not unlike quite a few of their American counterparts, have acquired prestige through hard labor at specialization, should be hesitant to expose themselves to the charge of facile generalization? Characteristically, in J. H. Greenberg's miscellany — based on the *Universals of language* (Cambridge, Mass., 1963) transactions of a symposium —, it is a younger Indo-Europeanist, W. Cowgill, who alone is represented by a paper on a narrowly circumscribed subject: "A search for universals in IE diachronic morphology" (91–111).

[37] *Die semasiologische und stilistische Funktion der "trat- / torot-" Alternationen in der altrussischen Literatursprache* (Heidelberg, 1933); cf. J. Ferrell's weighty review, in *Word* 19.400–6 (1963), of A. Šaxmatov and G. Y. Shevelov, *Die kirchenslavischen Elemente in der modernen russischen Literatursprache* (Wiesbaden, 1960), with some attention to reactions by other scholars (esp. G. O. Vinokur and N. Trubetzkoy). The problem was already known, in rough outline, to 18th-century trailblazers (Lomonosov, Tredjakovskij).

If the vicissitudes of borrowing and the crystallization of subsystems, involving as they do a plurality of languages, doubtless rank among the most obvious potential beneficiaries of any intensified program of research in general diachronic linguistics, it is difficult to isolate a process that could not be further clarified by the use of a larger and more powerful lens. Phenomena already tentatively explored during the Golden Age of historical linguistics (loan translation, folk etymology, sound symbolism, varying degrees of avoidance of homonymy, Age-and-Area, say) could be redefined and in most instances revived. Numerous problems so far merely broached and worthy of thorough ventilation (to cite at random a few themes, chosen on an admittedly subjective impulse: hypercharacterization, variation as a clue to dating, reverse influence of derivatives on primitives, morphological conditions as a stimulus for sound change, multiple causation, interplays of discrete forces pressing for rearrangement, analyst's dilemmas between phonological irregularity and lexical complexity, distinction between primary and secondary etymological bases — all of them marked by a temporal and causal slant) certainly qualify for inclusion. And European scholarship, with its tested flair for history, in general, and for sequences and concatenations of half-hidden events, in particular, still has at its disposal an unrivaled reservoir of untapped talent.

For Western and Central Europeans, who can afford to fall back upon an enviable body of competent, not seldom masterly, studies (written in their own languages) on historical linguistics — a corpus spanning a century and a half — the problem of the future of diachrony is by and large psychological. There is no need for them to abandon microscopic inquiries, at which they so excel: rigorous laboratory research of the highest quality can never be dispensed with in a discipline such as ours. What is needed, to restore the badly impaired balance, is a growing awareness of alternatives to overspecialization; not an abandonment of provinces of solid knowledge already conquered, but disencumberance of major traffic routes which have temporarily almost become blocked.

COMPARATIVE LINGUISTICS

OSWALD SZEMERÉNYI

By an odd coincidence, 1816 and 1916 are both epochal years in the history of modern linguistics. In 1816 Bopp's (1791–1867) *Conjugationssystem* inaugurated a new era, that of COMPARATIVE LINGUISTICS. After two millennia of an ever more intensive study of language in the philosophico-normative tradition, it signalled the first truly novel departure: henceforth the emphasis of linguistic study was to be on prehistory and, somewhat later,[1] on history, not on the systematization, by means of rules, of what was regarded as a practically unchanged linguistic tradition, especially in the case of Latin or Greek. The *scienza nuova* had a very good run: three generations produced works and achieved results which even today command respect.

But it cannot be denied that, after fourscore years, signs of an incipient malaise could be discerned. In retrospect, it can be ascribed to two distinct causes. First, a growing dissatisfaction with the theoretical position that linguistic study must, if not exclusively, at least primarily, be historically oriented. Secondly, a vague feeling, seldom articulated,[2] that all problems had been solved, that even if new material were to be discovered, it would not be earlier than that in the linguists' possession and therefore would not affect the results achieved. This feeling was bound to assume a more definite form when, in 1916, with the publication of the last missing part, Brugmann's (1849–1919) magnum opus, the famous and still unreplaced *Grundriss*,[3] was completed in its second edition.

And yet, 1916 proved a second turning point in the history of modern linguistics. It saw the publication of Ferdinand de Saussure's *Cours de linguistique générale*, prepared for the press by his pupils Charles Bally and Albert Sechehaye from notes of

[1] I mean 1819, the year in which Grimm's *Deutsche Grammatik I* was published and the historical (and comparative) study of the Germanic languages founded.

[2] An interesting exception is Meillet's statement in the first edition of the *Introduction* (1903:410f.): 'En un sens au moins, il semble qu'on soit parvenu à un terme impossible à dépasser: il n'y a pas de langue, attestée à date ancienne ou récente, qui puisse être ajoutée au groupe indo-européen; rien non plus ne fait prévoir la découverte de textes plus anciens des dialectes déjà connus...; seule, une trouvaille d' espèce inattendue pourrait apporter des faits qui renouvellent l'idée qu'on se fait de l'indo-européen; il ne vient plus à la grammaire comparée des langues indo-européennes de matériaux vraiment neufs.' It is just as interesting to observe how events forced Meillet to rewrite this paragraph; see, e.g., the eighth and last edition of 1937, p. 479f.

[3] This great work has now been reissued by W. de Gruyter together with Delbrück's *Idg. Syntax* I–III, forming vols. III–V of the new work.

students on the course given by Saussure three times between 1907 and 1911. If ever there was a book which became a book without its author's knowledge and quite possibly against his intentions — this is it.[4] And yet this non-book, conceived in and by mistake, whose history is currently being unrewritten in a truly Orwellian fashion, was to be one of the most influential and seminal works of the next half-century.[5] Comparative linguists have every reason to be grateful that even seminal works have to contend with the law of inertia and need quite some time to put their message across, otherwise Saussure's insistence on a strict separation of synchronic and diachronic studies and his obvious preference for the former could have brought instant disaster.[6] As it is, comparatists, i.e., in the new terminology, diachronists, went on studying their traditional problems in the traditional manner, while the descriptivists, i.e. synchronists, were simply trying to establish themselves. By a happy coincidence, Prince Nicolai Trubetzkoy and Roman Jakobson, the leading figures of the movement which helped Saussurean ideas to a real breakthrough in the late twenties, were themselves deeply imbued with interest in diachronic problems. Separatism could have gained additional momentum from developments in America since there, for quite different reasons, descriptivism was not only embraced but almost completely surpassed comparatism in the interwar years. But during that period American influence was still negligible in Europe and after the war, especially in the early fifties, when the balance of power had completely changed in the intellectual field, too, a modus vivendi was brought about by the concerted efforts of such scholars as R. Jakobson, A. Martinet and others; Martinet's *Économie* (1955a) in particular is a landmark on the road towards a fruitful integration of the two methodologies (for a brief summing up see Martinet 1968a; Szemerényi 1968b: 12f.).The upshot of this development is a change of the relative positions in the hierarchy: whereas formerly diachrony was the essence of linguistic study, in the new dispensation synchrony occupies the centre and diachrony is subordinate to it (see Szemerényi 1962a:6; Wittmann 1968:10).

But 1916 is an epochal year in one further respect. Although texts in a theretofore unknown language, Tocharian, had been published since 1893, and the Indo-European

[4] On the complex history and the value of the 'edition' see now R. Godel, *Les sources manuscrites du Cours* 1957, on the points here raised p. 29f.; and especially R. Engler, ed., *Cours de linguistique générale, édition critique*, I–IV, 1967–69. On Saussure, see the monograph by G. Mounin: *Saussure ou le structuraliste sans le savoir*, 1968, but also Benveniste, "Saussure après un demi-siècle", 1963; Godel 1966; Rensch, "F. de Saussure und G. von der Gabelentz", 1966; Coseriu 1967; E. Zwirner 1967. It is a shattering experience to learn (Starobinski 1964, 1967) that, during the period in which he lectured on general linguistics, Saussure was preoccupied with anagrams, i.e. conscious repetitions of the sounds of names etc., from the study of which he hoped to obtain the key to certain secret poetic practices; thus in the well-known line of the Old Latin Scipio-epitaph *Mors perfēcit tua ut essent omnia brevia* he found in the vowels of the first three words (o-ē-i-u) a secret expression of the name Cornēlius. One can but wonder whether these 'somewhat strange researches' (Godel 1966:493) really had to be made public, seeing that their author did not find them ready for publication.

[5] On the favourable intellectual climate of the twenties see R. Jakobson 1963.

[6] The first to raise his voice against the unfortunate schism was W. von Wartburg, 1931, 1. Heft; also 1956:159–65, and 1962²:11.137f.

character of the language recognized from 1907, Meillet's dictum (fn. 2) was unaffected since the texts came from the 6th–8th c. A.D. Quite another matter was the discovery made some years later by the Czech scholar B. Hrozný (1879–1952). He had been studying for some time the clay tablets which had been unearthed by the hundreds in successive campaigns at Boghazköy, some hundred miles east of the Turkish capital of Ankara, from 1905 on. Of the several languages used on these tablets, all recorded in the known cuneiform characters and therefore readable even when not understandable, he was particularly fascinated by one, now called Hittite. After a thorough study he convinced himself that Hittite was an Indo-European language. This claim, put forward at a meeting of the Near Eastern Society in Berlin on 24 November 1915, was made public in a monograph whose first part appeared in 1916. The evidence produced was 'une trouvaille d'espèce inattendue', which Meillet had practically despaired of: here was an Indo-European language which was older than all known theretofore, and, as was seen in due course, had a structure which differed considerably from that of such early attested members of the family as Greek or Indic.

Thus 1916 signals two cataclysmic changes: first a complete change in outlook concerning the position and nature of historical and comparative linguistics; secondly, the discovery of a language, or rather language group (Anatolian), which on closer scrutiny offered more and more data apparently irreconcilable with the picture of Indo-European delineated by past research.

1916 is naturally merely the beginning. In both cases it took many years until the change became noticeable in comparative linguistics, though the period of incubation varied. The idea of system, for instance, hardly affected comparative study before the early fifties. On the other hand, some data of Hittite began to modify the prevailing picture as early as the mid-twenties. Nor should it be overlooked that new material has come from other quarters as well. The increase in Middle and New Iranian linguistic material has been spectacular, especially since the early thirties, and it has affected our understanding of Old Iranian and Old Indian, and through them, of Indo-European.[7] Even more direct is the impact of the decipherment of Linear B on Indo-European studies: an early phase of Greek, not later than 1200 B.C., often enables us to decide whether something found in historical Greek can be traced to Indo-European or not; this applies to, e.g., the comparative in *-ion-* (Szemerényi 1968a), or the perfect participle active stem in *-t-* (Szemerényi 1967a), points that will be taken up later.

In order to give a more detailed account of developments in our field in the last half-century, we shall discuss the main points under the following headings:

I. Phonology
II. Morphonology
III. Morphology
IV. Syntax
V. Lexicon

[7] Cp., e.g., the differing appraisal of IE **bhāghu-* 'forearm': Szemerényi 1959a:61; Mayrhofer 1963:429.

VI. Study of the 'fragmentary' Indo-European languages
VII. Groupings and subgroupings
VIII. Homeland-culture-poetic language.

I. PHONOLOGY

At the beginning of the interwar period the Indo-European phonological system was, generally speaking, reconstructed in two different ways. The German view (see e.g. Leumann 1926–28:55) can be represented by the following system:

i		u	ī		ū	ṃ	ṃ̄	p	b	ph	bh	m	s	z
						ṇ	ṇ̄	t	d	th	dh	n	sh	zh
	e ə o			ē	ō	ṛ	ṝ	k′	g′	k′h	g′h	ñ	r	l
						ḷ	ḹ	k	g	kh	gh	ŋ	y	w
	a			ā				k^w	g^w	k^wh	g^wh	ŋ		

The French view (Meillet 1937:82f.) differs in that it is not phonetic but phonologically oriented:

vowels	sonants	consonants	
e o	y w ə	p b ph bh	s.
a	m n r l	t d th dh	
		k g kh gh	
		k^w g^w k^wh g^wh	

The sonants can function as vowels (i u ṃ ṇ ṛ ḷ) or consonants (y w m n r l), and ə with the other sonants gives long vocalic sonants (ī ū ṃ̄ ṇ̄ ṝ ḹ); a e o are short and long.

1. *Laryngeals*

It is interesting that Meillet, who with the sonants merely continued one of the basic tenets of the young Saussure's *Mémoire* (1879), nevertheless refused to adopt another tenet, to wit that long vowels are not original but 'contracted' from *e* and one of two sonants, *A* and *O*, which gave *ē*/*ā* and *ō* respectively (Saussure 1879 = 1922:135). One can see of course why Meillet should have jibbed at accepting this doctrine. Saussure had assumed that *A* and *O* could also appear on their own, were in fact identical with the historical *a* and *o* phonemes in, e.g., Lat. *agō* and *odōr*, which was obviously insufficient: one either had to accept Möller's suggestion[8] that there were (at least)

[8] Put forward immediately after the publication of the *Mémoire* in *Englische Studien* 3, 1880:151[1]; *PBB* 7, 1880:492[2]. — Lehmann 1968:404 speaks of the unfortunate label 'laryngeal' used by Möller at *Engl. Stud.*, l.c., I can find no mention of the term there and indeed for many years to come; it is high time the early history of the laryngeal theory were properly written.

three sonants or, as they were gradually coming to be known, laryngeals (E, A, O) which with the single basic vowel *e* gave *ē*, *ā* and *ō* respectively, or try to make do with the more modest possibilities of the shwa in the German system. Meillet took the latter course, although the future belonged to the Saussure-Möller doctrine (which in France itself was consistently advocated by Albert Cuny (e.g. 1910:cccxcii, 1912; 1919:47f.)), for one of the first major contributions of the newly deciphered Hittite language lay precisely in this field. As early as 1927, the young Polish scholar Jerzy Kuryłowicz was led not only to reaffirm the laryngealist theory on internal grounds (1927a) but also to claim (1927b) that the second laryngeal which colours an adjoining *e* to *a* and before a consonant gives *ā* (*eH₂C>aHC>āC*) actually survived in Hittite as *h*; of his examples we may still quote Lat. *ante*: Hitt. *hant-ezzis* 'first', Lat. *argentum*: Hitt. *harkis* 'white', Lat. *pāscō*: Hitt. *pahs-* 'guard, protect'.[9] In the next few years Kuryłowicz went on elaborating these views and in 1935 summed up his results in his *Études* (p. 27f.). The same year also saw the publication of Benveniste's *Origines* which led to widespread acceptance of the three-laryngeal view (pp. 148f.).

With this the main problem seemed settled. There could be no doubt any longer that Saussure's basic idea was correct: in the Indo-European system there was only one vowel, *e*, the long vowels were fusions of it with different laryngeals, the short vowels *a* and *o* were *e* coloured by a preceding or following laryngeal of the appropriate timbre. For a number of years the only problem was to establish the NUMBER of laryngeals to be assumed for IE. Whereas Benveniste thought — as had Möller originally — that three were adequate, Kuryłowicz saw that Hittite had in initial position not only correspondences of the type *ha-*:*a-* in other languages, but also *a-*:*a-* in other languages, e.g. Hitt. *appa* 'after': Lat. *ab*, and felt forced to posit a fourth laryngeal for such cases. But, strangely enough, while the four-laryngeal view carried the day in the States (see e.g. Lehmann 1952:98, 104f.), in Europe it did not 'take'; three remained the maximum (staunchly defended by, e.g. Couvreur 1937, see Friedrich 1941:92-5, and cf. Couvreur 1943), but there were various attempts to reduce the number of laryngeals to two (Pedersen 1938:180, and less decidedly by his pupil Hendriksen 1941:88f.; Crossland 1951:121), or even one (for instance Zgusta 1951:472).

A new phase in laryngeal research was ushered in by Martinet. Applying the methods of componential analysis, he set up an IE subsystem of ten members (1953b; 1957a, 1957b):

		velars	*pharyngeals*	*glottals*
without labialisation	open glottis	x	ḫ	h
	voice	γ	ε	—
	close glottis	—	—	ʔ
with labialisation	open glottis	x^w	$ḫ^w$	—
	voice	$γ^w$	$ε^w$	—

[9] As samples of the immediate reaction to Kuryłowicz's work, see Meillet 1929:60–2 (*BSL* 29/2); Marstrander 1929:290–4 (*NTS* 3), — It should also be noted that at *Symbolae Rozwadowski* I:94[1],

The labiovelar laryngeals were said to turn a basic vowel *e* into *ō* in preconsonantal but into *ā* in prevocalic position (1953b); hence a root **gnex^{w}-* 'to know' gives *(g)nōscō* and *(i)gnāvos* in Latin, and the same difference is seen between *octō* and *octāvos*. This easy means of accounting for various *v*-formations, amongst others for the Latin *v*-perfect, was enthusiastically received and further developed in America but met with little response in Europe.[10] The same applies to the assumption that $H+s$ developed into *-ks*: **sen-eH$_2$-* normally developed preconsonantally into **senā-* (cf. *senā-tus*) but before *-s* into *senek-s* (*senex*) (Martinet 1955b, 1956a). A similar 'hardening' is said to have taken place before certain laryngeals as well, even across word-boundaries, in sandhi. Lat. *costa* and Slavic *kostĭ* 'bone', compared with Hitt. *hastai*, Greek ὀστέον, are said to have their initial *k-* from a final *-H* which before initial H_3- was changed to *k* (Martinet 1955b:56; accepted and developed by Lindeman 1965a); in which case one must ask[11] why similar changes did not occur within word-units, e.g. in **strex^{w}-He(i)* from which Latin developed *strāvī*, and not **strōkī*.

It is perhaps time to make clear that the acceptance of laryngeals was never unanimous. German and Italian scholars[12] in particular continued to show the same reserve in respect of the new developments as did the previous generation (Streitberg 1914) towards the Saussurean 'coefficients sonantiques'. One of the earliest and most persistent critics has been Giuliano Bonfante[13] but the rejection was no less forceful on the part of Specht (1937:569) and in more recent years by Kronasser (1952, 1956: 75–96, 244–48, 1962:94–100). Many scholars in these countries have simply ignored these questions. But lately a growing number of younger scholars has been converted to the new doctrine, amongst others Scardigli (1957) and Ambrosini (1960, though with many misgivings) in Italy, Mayrhofer (1964) and Strunk (1965) in Germany. And we may mention here that, with the general revival of historical and comparative linguistics in the Soviet Union, the laryngeal theory has also received due attention. The Georgian scholar Gamkrelidze assumes that Late Indo-European had one pharyngal spirant which coalesced from three earlier pharyngal spirants but still has two allophones in Hittite (1960, cp. also 1964), while V. V. Ivanov posits two laryngeals which are given no closer definition (e.g. 1965, esp. 11–18).

This brings us back to the nature of the so-called laryngeals. As we have seen, many scholars avoid giving them a phonetic complexion and prefer treating them as

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Cuny also suggested that Hitt. *h* reflected a laryngeal and Sturtevant (1927:121) threw out the idea that some instances of internal *h* represented a sound lost in other IE languages. But a systematic study was performed by Kuryłowicz only.

[10] Adrados seems the only exception, cp. 1966:3, where beside the labiovelar type H^{w}, a palatal set H^{y} is defended.

[11] Cp. Collinge 1959:231; see also Polomé 1959:392f.; *AIED* 40. Note that Slavic *kostĭ* has to be left out of this discussion since it is a rather late replacement of *ost-*, see Mel'ničuk, *Etimologija* 1966, Moscow 1968, 234f., who suggests that it derives from *kes-/kos-* 'cut'.

[12] One can hardly mention C. Marstrander in this context who pronounced but once on and against the laryngeals, and that in a review (1929) of Kuryłowicz's earliest papers.

[13] See his reviews of Benveniste's *Origines*, 1936, of Kuryłowicz's *Études*, 1937, and more recently "La teoria laringale", 1957; and his review of Adrados' *Laringales*, 1963 (with Adrados' reply, 1964).

algebraic entities (explicitly, Benveniste 1962:10). An entirely new approach has been prompted by developments in linguistic typology. As R. Jakobson put it: 'views, prior or opposed to the laryngeal theory, which assign no /h/ to IE, disagree with typological experience: as a rule, languages possessing the pairs voiced-voiceless, aspirate — non-aspirate, have also a phoneme /h/' (1957=1962:528). Since IE did have the pairs in question, we must ask where the phoneme /h/ is, which by implication is presupposed by them. The answer can only be that it is identical with the so-called 'laryngeals': IE had only one phoneme of this kind, and that was identical with the glottal spirant *h* (Szemerényi 1967b:89f. Also, without giving his reasons, Vaillant 1950:241.). It is not, however, impossible that part at least of these true laryngeals developed from earlier (post)velars as has been suggested by the late Illič-Svityč (1968a:335) and independently by Schmitt-Brandt (1967b:106f.).

For a detailed review of laryngealist theories down to c. 1963, see Polomé (1965), to c. 1970, Szemerényi (1970:114f., 130f.).

2. *Shwa*

Laryngealists must also take a stand on the question of shwa. In the view of the neogrammarians, alternations like Skt. *sthā-/sthitas* or Lat. *stā-/stătus* represent Indo-European alternations of a long vowel with a product of its shortening and the latter is usually viewed as a single phoneme, a murmured vowel of mid-central articulatory position, contrasting with all the long vowels. Thus the nil-grade of *ā,ē,ō* is uniformly *ə*; if Greek seems to offer three different nil-grade timbres, that is simply due to analogical approximation to the timbre of the corresponding long vowel.

The position is quite different in the context of the laryngeal theory. If the long vowels themselves are amalgamations of the basic vowel *e* with different laryngeals, then the nil-grade would show nothing but the laryngeal: if **stā-*=**steH₂-*, then, after the accession of, e.g., the stressed suffix *-tó-* and the concomitant loss of the root-vowel, only **stH₂tós* is left. On the face of it, it looks as though, like the 'sonants', the laryngeals, too, could in certain environments become syllabic. This would seem to suggest that Brugmann's and Meillet's shwa was identical with Saussure's and Möller's laryngeals, the shwa was simply the vocalic allophone of the laryngeal.

If three laryngeals are assumed, it would seem logical that their syllabic allophones should show the same number. This view, advocated by Fick and Bechtel, also by Cuny (1912:120f.), was first adopted by Kuryłowicz (1927a:233f., 1935:29², 44) too; in this view, the triple representation in Greek (α,ε,ο) would preserve something archaic of which the other languages have no trace. On the other hand, it would be possible even in laryngeal theory to assume that a multiplicity of different shwas collapsed in one vowel, and the Greek state of affairs is due to innovation. This view, first advanced by Saussure and taken over by Brugmann and Hirt, has in our period been adopted by Hjelmslev (1937a:43f., 1966:49), Hendriksen (1941:92f.), and lately by Kuryłowicz (1956:201f., 1968:252f.). And in view of obviously archaic

ablaut-relations such as χῆτος : χατίζω 'want, lack', γλῶσσα : γλάσσα 'tongue', etc. this conclusion is clearly unavoidable.

This still leaves the question open how the shwa developed into *a* and, in Aryan, *i*. With the neogrammarian view there is of course no difficulty: a long vowel was shortened just as a short vowel was, except that while a short vowel became Ø, a corresponding shortening of a long vowel would be expected to leave a short vowel, the shwa. With laryngeals, however, there is the initial difficulty that they seem to be consonants, more precisely spirants. This is suggested by Saussure's observation (1922:603) that some instances of Tenues Aspiratae have their aspiration from a 'shwa' (e.g. Skt. *pṛthu-* 'broad' from IE **pl̥tH-u-*) which was apparently confirmed by Kuryłowicz's discovery that some instances of 'shwa' survive in Hittite as *h*. But the spirant-character of the laryngeals seems to be proved by their distribution as well: empirical root-structures such as 1) TeHT-, 2) TeRH-, 3) TR̥H-T- — where T is any stop, R a sonant, H a laryngeal — show that 1) the laryngeal is more sonorous than a stop, 2) less sonorous than a sonant and this is confirmed by 3) showing that if in a sequence RH one of the two has to become syllabic, it is R, and not H. This proves that, as far as sonority is concerned, laryngeals have a position between sonants and stops, like spirants, or: they are spirants (see Kuryłowicz 1935:121f.; Ammer 1952:212; Martinet 1957b:28; Gamkrelidze 1960:87, 1964:47, cf. Lehmann 1952:92f., 106f.). Many scholars think that such phonemes cannot function as syllabics. Therefore Kuryłowicz assumed that shwa was not identical with the laryngeal but developed from it in combination with a shwa secundum; thus, e.g., Skt. *sthitas* continues **stH$_e$tós* where **stH$_e$* is the weak form of **stHe-*, not **steH-* (from which **stā-* developed) (Kuryłowicz 1935:55f. Cp. also 1956:168 n. 6). Not very different is Burrow's hypothesis that a shwa represents a suffix; thus, e.g., Skt. *sthitás* is from IE **stH$_2$-itós* (from a verb **sth-áyati*!), while Lat. *status* is from IE **stH$_2$-etos*, and similarly the word for 'father' is Skt. *pitar-* from **pH-i-ter-*, Iranian *ptar-* from **pH-ter-*, and Lat. *pater* from **pH-e-ter-* (Burrow 1949: 48, 59 and 38, 50, 1955:88, 104f.). But this method does so much violence to the facts that it cannot be right. No wonder that Kuryłowicz has now adopted the view that phonologically there is no difference between **dHtós* and **dətós* (1956:170, 109 n. 14), which is tantamount to saying that the laryngeals can assume syllabic functions (1962:112; see also Collinge 1953:76f.; Gamkrelidze 1964:49), but can hardly remove the difficulty inherent in the fact that the laryngeal is a spirant. Szemerényi (1967b:90, 92) admits original long vowels which in the nil-grade are weakened to a shwa, and late long vowels which in the IE languages other than Hittite were fused from *vowel*+*h* and whose nil-grade form was *h* with an anaptyctic vowel before which the laryngeal *h* was lost in due course; the two nil-grade vowels were merged in the single shwa phoneme *ə*.

3. *The Vowel System*

In the first quarter of the present century there were three views of the IE vowel

system: 1) the neogrammarian view of five vowels short and long, with the addition of a shwa; 2) the Saussurean view (1879) of one basic vowel modified by various coefficients; 3) the combination of the two views in Meillet's eclectic system of three vowels short and long (*a,e,o*, but not *i* and *u*) with shwa as an additional member.

Kuryłowicz's discovery in 1927 that Hittite *h* represented one of the laryngeals of the Saussure-Möller system naturally suggested that Saussure's one-vowel system was also correct,[14] and in the thirties the one-vowel system was proclaimed by several authors, among them Benveniste (1935:147f., esp. 149, 170) and Hjelmslev (1937a:43, 1937b:51).[15]

Typological misgivings were voiced almost at once by Trubetzkoy: 'Sprachen mit einem einzigen Vokalphonem scheint es in der Welt nicht zu geben... Die uns bekannten Sprachen besitzen immer mehrere Vokalphoneme, die bestimmte Vokalsysteme bilden', who also added a warning: 'Daher soll man sich hüten, solche Verhältnisse für rekonstruierte Sprachperioden anzunehmen, wie es leider manchmal geschieht' (Trubetzkoy 1939a: 86f. and 87 n. 1)[16]. But such warnings went unheeded and R. Jakobson felt obliged to repeat them at the 8th Congress of Linguists in 1957: 'The one-vowel picture of Proto-IE finds no support in the recorded languages of the world' (1958:23[17]). Kuryłowicz, too, began to reaffirm more explicitly the doctrine which he had stated thirty years before (fn. 14), i.e. that, beside *e*, there were also *o i u* and similarly, beside secondary long vowels, there were also primary *ē ō ī ū*; only *a* and *ā* were still considered secondary (Kuryłowicz 1956:106 n. 10, 382, 392–93; for more recent statements, 1962:112–14; 1964a; 28; 1968: 202f., esp. 206f.). In recent years Szemerényi has argued against the one-vowel 'system' on the grounds of plain reconstruction and of universals established by linguistic typology; he also shows that on the strength of Hittite evidence the parent language must be credited with original long vowels but also with sequences of short vowel+*h* which in languages other than Hittite in preconsonantal position also developed into long vowels (Szemerényi 1964b: 6f., 1967b:69f.). A return to the Sanskritoid vowel-system of the last century (*i a u*) is now advocated for Proto-IE by Schmitt-Brandt (1967b:112f.) who assumes that *a* became *e* under the accent, otherwise *o* (e.g. *pádam — padás* developed into *pédom — podés*), but in uvular or pharyngal environment *a* retained its colour while *i* and *u* were umlauted to *e* and *o*[18]. An IE one-vowel system, collapsed from a three-vowel system, is assumed by Illič-Svityč (1964:26).

[14] In spite of Kuryłowicz's explicit statement to the contrary (1935:72): 'la grammaire comparée ne réussira jamais à débarrasser l'indo-européen de toutes les voyelles sauf *e*, bien qu'elle le tente toujours'.

[15] See also Borgström 1949:138; Martinet 1953c:267.

[16] It is interesting to note that one of the two inaugural lectures given by Trubetzkoy in 1916 (see 1926:277) dealt with "The problem of the reality of the parent language and the modern methods of reconstruction".

[17] Reprinted in *Selected Writings I*, 1962:528.

[18] IE **dōm* (Greek δῶ, Arm. *tun*)'house' is said to have acquired its *o*-timbre from compounds (1967b:127) which is hardly credible.

4. *The 'Gutturals'*

Since 1890 three different kinds of velars have been assumed, for part or the whole of the IE languages, *palatals*, *velars* and *labiovelars*.[19] They can be illustrated with the following equations:

palatal: Greek ὠκύς 'fast', Lat. *ōciōr*: Skt. *āśu-* 'fast'

velar: Greek κρέ(ϝ)ας 'meat', Lat. *cruor* 'blood': Skt. *kraviṣ-* 'raw flesh'

labiovelar: Lat. *quis*, Hitt. *kwis*: Skt. *kas*.

As can be seen, each language exhibits only two kinds of velars: the Western languages, e.g. Latin or Greek, do not distinguish palatals and velars, the Eastern languages, e.g. Sanskrit, show no difference between velars and labiovelars. In 1907 (:57–60) E. Hermann (1869–1950) objected therefore to the ascription of all three series to Indo-European as being a logical fallacy. Since the fact and the statement have been repeated and made the basis of far-reaching conclusions, it will be as well to start our discussion by noting that it does not apply to the languages of the East, the so-called satem-languages, for they still preserve traces of the labiovelars as distinct from the velars. In Sanskrit, the labiovelars reveal themselves by showing the same *u*-colouring effect on syllabic liquids as the pure labials; *guru-* 'heavy (IE **g^{w}ṛu-*, Greek βαρύς) and *gūrta-* 'welcome' (IE **g^{w}r̥tos*, Lat. *grātus*) can be compared to *puru-* 'much, many', *pūrṇa-* 'full', but differ from *girati gīrṇa-* 'swallow (ed)' and *śiras-*, *śīrṣaṇ-* 'head'. In Armenian the labiovelars are, with the exception of the Media, palatalized before *e* and *i/y*, but the velars are not. In Slavic the nil-grade of IE **g^{w}hen-* is **ghun-* (OChurchSl. *žen-*: inf. *gŭnati* 'drive') whose *u* reflects the labialization of the labiovelars. There are perhaps traces of the difference in other satem-languages also — Albanian is often invoked — and thus the three series must be regarded as firmly established for the satem-languages.[20] On the other hand, for the centum-languages only two sets can be established independently.

But these developments took place after the Second World War. In the interwar period there were several attempts to explain the labiovelars as a centum-innovation. F. Ribezzo had already written on the subject in 1903 and in 1922–23 returned to the problem suggesting that the labiovelars were under certain circumstances secondarily developed from pure velars (see also Ribezzo 1929a). The same solution was offered in 1912 (:54) by the Hungarian scholar József Schmidt and in 1922 by H. Reichelt who tried to give a more precise formulation of the conditions (assimilation: *wek>wek^{w}*, dissimilation *ki>k^{w}i*, influence of a nasal: *ong^{w}*, analogy) under which labiovelars came into being. This line of thought was later taken up by Kuryłowicz (1935:1–26) who advanced the view that the labiovelars — a centum innovation, as was maintained by Reichelt, too — developed from velars before palatal vowels (*e,i*). Although it has been repeated in more recent works (Kuryłowicz 1956:356f., 1962:108f., 1964a:12;

[19] For the history of the problem we must still refer to Bechtel, *Die Hauptprobleme der idg. Lautlehre*, 1892:291f. The name 'labiovelar' was coined by Thurneysen, *IF* 4, 1894:264 n. 1.

[20] See the references in Szemerényi 1964a:401–2, and Vaillant 1950:171f.; Pisani 1967:227f.

also Ivanov 1958:23), this view has not met with favour, primarily because of the intrinsic improbability of the explanation, seeing that in the large number of historically authenticated cases palatal vowels have one known effect: they palatalize; besides, labiovelars appear before *a* as well (see Debrunner 1938:58; Georgiev 1966:28).

The opposing view which derives the palatals from an earlier velar series and regards the labiovelars as irreducible was for this very reason much more popular right from the start. As early as 1893 Meillet advanced what was essentially a palatalizing view. But while Meillet concentrated on explaining the remaining velars, Hirt tried to show in 1899 that the palatalized forms originally had the vowel *e* or *i*. Both scholars remained faithful to their doctrines in later years, too (Meillet 1937:91f.; Hirt 1927a: 226f.). Hirt's theory was early adopted by the Bulgarian comparatist, Vladimir Georgiev (1932, 1937), who has recently given us a revised version of his views (1966: 28f.), and by the Hungarian scholar János Szidarovszky.[21] A novel departure in the essay of the Russian scholar, M.I. Burlakova, is that she ascribes the palatalization of the earlier velars to a following *i* or *laryngeal* (1962:65).

The Meillet-Hirt view presupposes that at some stage a system with two velar sets was by a split of the pure velar set changed to a system with three sets. The neogrammarians and their contemporaries took it for granted that the palatal set was part of the IE system, and regarded the absence of any trace of palatals in the centum-languages as due to later loss. But our century regards an assumption of this kind as a priori unlikely; besides, it is deeply interested in the details of this process, the so-called satemization: where did it originate and when, and how did it spread?

The fact that satemization is complete in Indo-Iranian but shows exceptions as we travel westward in the satem world, has been interpreted as suggesting that the centre of satemization was in the Aryan area from where it spread in all directions — a typical manifestation of Joh. Schmidt's wave-theory. This was clearly formulated by József Schmidt (1912:45): 'the waves of palatalization and spirantization started from the extreme Eastern fringe and rolled with decreasing intensity towards the West', and a similar interpretation, in the framework of linguistic geography, was also offered by Sköld (1931:56–79). Shortly after, Pisani (1933:551f., 1950:536, 1961b:16f.) advocated Iran as the centre of radiation, and this is certainly more likely than the view, advanced a.o. by Senn (1954:175) and Devoto (1962:345, 398), that it started from the Slavic area. Aryan origin has also been advocated by Porzig (1954:76) and, quite recently, by W.P. Schmid (1966:11), and it is again more likely than independent development in several languages as is suggested by Georgiev (1937:124; and without reservations 1966:46) and Abaev (1965:140f.). From the Indo-Iranian or Iranian area it spread westward to the Slavs and the Balts, and nearer home to the Armenians. Porzig (*l.c.*) assumes that the wave of palatalization spread when the Aryans still lived north of the Black Sea.

As to the time of satemization, Pisani (1933:646, 1961b:15f.) thinks of a time before

[21] See his inaugural lecture delivered at the Hungarian Academy in 1936 and published in 1937: *Ujabb elméletek az indogermán inyhangokról* (Recent theories concerning the IE velars).

1,000 B.C., Porzig (*l.c.*) suggests a date not earlier than 1500 B.C., while Schmid (*l.c.*) dates it before 1500 B.C. All these dates are far too low. As was pointed out by Szemerényi (1964b:1 n. 3), the form of the numeral '5' in the Hittite texts, *panza*, which represents Aryan *pančа*, shows that by about 1500 B.C. the IE form **penk^{w}e* had lost the labialization of its labiovelar (giving **penke*), had been palatalized to **penče* and with the development *e>a* changed to **pančа*. All these steps require as many centuries and probably even more. The palatalization known as satemization precedes all these changes, again by several centuries. Even if the fourth millennium B.C. (Georgiev 1966:38) is beyond our control, it is certain that the satemization cannot be dated later than 2300 or even 2500 B.C.

This being the case, the question arises again whether the palatals should be regarded as an all-IE development or as confined to part of the linguistic area. As is known, Hirt always regarded the palatals as antedating the ablaut weakenings and consequently as all-IE (1939:163). And if the palatals are not regarded as a transcendental series but as a series which developed before front vowels it is indeed difficult to see how a pre-dialectal date, and with it the all-IE character, of the process can be avoided for such cases as Lat. *octō*: Iran. *aštā* where the palatal appears before a consonant. As Kuryłowicz (1956:358[22]) put it: 'Expliquer la palatalité du *k̂* de **ok̂tōu* par une voyelle palatale $_e$ disparue (<**ok̂$_e$tōu*) équivaut donc à plaider l'origine antédialectale de *k̂,ĝ,ĝh*.' The only way out would be to assume that the conditioning factor could disappear at a later date. This is possible if Szemerényi (1964a:400) is right in assuming that a primitive form **okitō* could be syncopated to **ok^{j}tō* in post-IE times in the several histories of the individual languages.

The two views examined so far can be represented by the following diagram:

		I			II	
IE	k̂	k			k	k^{w}
Satem	k̂	k		k̂	k	k^{w}
Centum	k̂	k	k^{w}		k	k^{w}.

To be quite accurate, the diagram ought to show under II that according to some adherents of this view k̂ arose in IE times.

Both views imply that 'at the beginning' there were two series which cannot be reduced to a simpler state of affairs. As against the DUALISTS stand the MONISTS who hold that one velar series was subsequently diversified. The monistic view appears in two varieties.

As far back as 1897, Pedersen maintained that the three series developed in accordance with the nature of the following vowel from one original series (Pedersen 1897:192; cf. 1900:292f., 298f., 1908:354, 1951:3). Consistently upheld by Ribezzo (1903, 1922–23, 1929a), this view has been defended in our period by Hermann (1943) and Specht (1944:316f.), and quite recently by Otrębski (1963:11f., 14). The condi-

[22] There 366f. also on the process of assibilation.

tions of the differentiation are, however, either not stated or in the vaguest terms only. Refreshingly precise is Illič-Svityč who affirms that in the IE-Uralaltaic equations collected by him, IE labiovelars correspond to UA velars before labialized vowels, IE palatals to UA velars before illabial vowels, and IE velars to UA velars before *a*; when the pre-IE variety of vowels gave way to the Proto-IE system with one vowel, the velar allophones (k^u,k^i,k^a) were phonologized (Illič-Svityč 1964).

The other variety of the monistic school of thought starts from the observation that the labiovelars are not originally a peculiar set of phonemes but simply sequences of *velar*+*w*; combined with the view that the palatals developed from pure velars, this theory can account for all three series with processes known from linguistic history. It is held by, e.g., Vaillant (1950:171f.) and Szemerényi (1970:137f.).[23]

5. *Aspirated Stops*

The Sanskrit phonological system with two sets of stops (voiceless–voiced) accompanied by two sets of aspirated stops was for a long time regarded as representing the IE system. The first breach was made by de Saussure in 1891 when he suggested that some instances of *th* developed from *t* and a laryngeal. Thus, e.g., *pṛthu-* 'wide' represented IE **pl̥t-H-u-*, *tiṣṭhāmi* an IE **(s)ti-stH-o-*, etc. (Saussure 1922:603). This explanation was not only adopted by Cuny in 1912 but also extended to some Mediae Aspiratae, to wit, Skt. *aham* 'I', *mahant-* 'great', *duhitar-* 'daughter' whose *h*, in contrast to Greek γ in these cases, was derived by him from *g*+*H* (pp. 119–20). Both categories were explained in the same way — and obviously independent of Cuny — by Pedersen in 1926 who went a significant step further: the Tenues Aspiratae (*TA*), he suggested, all developed from a sequence *T*+*H*, but the Mediae Aspiratae (*MA*) represented *M*+*H* in exceptional cases only (p. 48 n. 1). The following year, Kuryłowicz, who knew Cuny's paper, also came out in favour of the view that *TA* represented clusters of *T*+*H*, but argued that they were not of IE date but a SPECIAL DEVELOPMENT OF ARYAN; his main argument was that causatives of the type *janayati* 'begets' have, against Brugmann's law, a short root-syllable because at the time when the law operated the root-syllable was not open: the original **gonHeyeti* had become *janHayati* but had not yet reached the final stage *janayati*. At the same time he thought — against Cuny — that the *MA* in, e.g., Skt. *hánu-* 'cheek', *aham* 'I', contrasting with Greek γένυς, ἐγώ, could not derive from *M*+*H* (see Kuryłowicz 1927a:202f., esp. 217, 206). By 1935 (:46f., esp. 50f.) this doctrine had changed not inconsiderably. Now the explanation of *MA* from *M*+*H* was admitted for Cuny's examples. But the novelty lay in the explanation of the phonologization of the *TA*: the clusters *T*+*H* developed into new phonemes because they coincided with *ph th*

[23] I first put forward this theory in Budapest and Sofia in 1948, then in London in 1952. See Szemerényi 1964a:401 n. 3. This view is also held by Sturtevant; see Sturtevant and Hahn 1951:38, 55f.

kh which had developed initially in *sbh sdh sgh* (Siebs' law)[24]; this explanation has since been advanced repeatedly (e.g. Kuryłowicz 1956:375–82, 1962:107f., 1964a:13, 1968:339f.). A quite different solution has recently been proposed by Hiersche (1964): he thinks that the *TA* are to a large extent secondarily developed after *s* — as a result of the spontaneous aspirating influence of this spirant.[25]

If the *TA* are removed from the IE system, this necessarily affects the position of the *MA*. Kuryłowicz was well aware of this problem from the start. If *bh dh gh* have no voiceless counterparts, then they cannot be phonologically voiced; they may be voiced phonetically but that is phonologically just as irrelevant as the fact that the sonants *y w m n l r* mostly are (Kuryłowicz 1935:50[26]). In more recent years the problem has been discussed in the light of typological universals (see Szemerényi 1967b:88f.). According to Martinet (1955a:115, 136), *MA* do not seem to be attested unless there are also *TA* in the language. Jakobson, on the other hand, declared that 'no language adds to the pair /t/ — /d/ a voiced aspirate /dh/ without having its voiceless counterpart /th/, while /t/, /d/, and /th/ frequently occur without the comparatively rare /dh/...; theories operating with the three phonemes /t/ — /d/ — /dh/ in Proto-IE must reconsider the question of their phonemic essence' (Jakobson 1958:23 = 1962:528; cf. Ivanov 1958:37).

It was no doubt under the influence of such warnings that the *MA* began to be interpreted differently. Klyčkov (1963:7) suggested that *dh* was originally *ṭʰ*, a lax voiceless aspirate; Illič-Svityč (1968a:308, 353) derived the IE set *t d dh* from Nostratic *ṭ t d*; Hammerich (1956:7, also in Jakobson 1967:844) defined them as emphatics, i.e. laryngalized stops in which voice is irrelevant, and Gamkrelidze (1967: 709) compared them to the reconstructed Proto-Kartvelian glottalized stops. Others try to avoid these typological pitfalls by assuming spirants. The voiced spirants assumed by Walde (1897:461) at the end of the last century have been revived by Knobloch (1965:153); alone stands Prokosch (e.g. 1939:39f.) with his assumption of voiceless spirants.[27]

Although it is not necessarily of very great import, nevertheless it is of interest to know on what evidence the assumption of *MA*, i.e. VOICED ASPIRATES rests. That the phonemes in question were voiced, seems fairly clear: the descendants of these phonemes appear voiced in all IE languages which have the opposition voiced/voiceless, with the exception of Greek and, partly — in initial position — of Latin. But

[24] See also Lehmann's summary, 1952:80f. I must confess, though, that I cannot find this argument convincing. If *ph* in *sph* was from *bh* and so merely an allophone of *bh*, then any *ph* developing phonetically from *p*+*H* could only be interpreted phonologically as *bh*! Concerning Siebs' law (s. *KZ* 37, 1901:277–324) s. also Cuny, *REA* 38, 1936:73, and more recently Illič-Svityč, *VJa* 1961/4: 93–98.

[25] According to Heller and Macris, 1967:16 and 47, Sanskrit adopted the *TA* from Dravidian.

[26] It has not become clear to me how the two peculiarities of the *MA* there discussed (impossibility of roots with MA-T or T-MA, and Bartholomae's law) can tell us anything about the position of *MA* in the IE system: if anything, they prove that the *MA* had phonological voice. Kuryłowicz has repeated his views in the passages above.

[27] Contra: Hammerich 1956: Ch. II; Galton 1954:589f.

the assumption that they were aspirated rests on the direct evidence of Sanskrit and Greek alone, although a difference between two sets of (voiced) stops is revealed by Latin, Germanic, and, partly, Celtic also.[28] Even so, the direct evidence is confined to two languages, Greek and Sanskrit, and their evidence is at loggerheads: Greek shows voiceless aspirates, Sanskrit voiced aspirates. The almost general decision that Indo-European had voiced aspirates is taken, as indicated above, on a majority vote, against Greek.

In these circumstances it is interesting to note that Mediae Aspiratae have now been discovered in a second IE language. In 1958 H. Vogt[29] and E. Benveniste announced independently that the alleged voiced stops of Ancient Armenian were in fact voiced aspirates, the direct continuants of the IE phonemes: the usual transcriptions *b*, *p*, *ph* conceal /bh/, /p/, /ph/, a system in which there is an opposition of aspirate/nonaspirate, and within which voice in the former is phonemic while the voicelessness of the non-aspirate member is non-phonemic.[30] Actually the discovery was a re-discovery: the same interpretation had been put forward as far back as 1904 (:336–37) by Pedersen (see also 1921:45f.)[31]; it had been mentioned by Meillet in 1922(:13), but not in the 1936 edition of his Armenian grammar (pp. 24f.), and is ignored even in the latest survey (Solta 1963). Even more interesting is the fact that in 1951 Pedersen felt obliged to abandon his early interpretation (p. 15), though mainly because he did not think that it was helpful in explaining later developments within Armenian. I find the view that the IE *MA* are continued without change unacceptable for the following reasons. Armenian *khsan* '20' continues IE **wikṃti*, obviously via **gisan(ti)*; the fact that we find *khsan*, not **ksan*, shows that before the syncope a development from **gi-* to **ghi-* must have taken place.[32] In other words, voiced stops, even when secondarily arisen, developed into voiced aspirates. This is supported by loanwords from Iranian. An Iranian *d-* normally appears as Arm. *d-* (in the transcription!). But Iranian *dušmani* 'enemy' gives Arm. *thšnami*, i.e. *duš-* became **dhuš-* and, after the syncope, **dhš-* was unvoiced to *thš-*. Since *w-* can develop into *gw-* and then *g-* but not into *ghw-*, we must posit for that period initial *g-* in Armenian. If the new theory rightly assumes that *g* of Classical Armenian was /gh/, then we must conclude that the aspiration is a secondary development and not a straight continuation of an IE *MA*.[33]

But even without the direct evidence of Armenian, it seems certain that Indo-European had aspirates which were not only phonetically voiced but also phonologically in that they contrasted with voiceless aspirates. Although in some cases the

[28] For the methodology see Szemerényi 1968b:6f.

[29] But actually stated as far back as 1938 in *NTS* 9, 327f.

[30] Note also the discussion by many authors of the whole problem in the pages of *VJa* in 1959–61.

[31] These facts were duly noted by Allen 1951:134.

[32] Cf. Szemerényi 1960:126 (and Makajev 1961:28). But I was wrong to argue there against *g*>*gh*, and for *gs*>*khs*, since the latter can be supported with no evidence. Winter's argument ("Evidence for laryngeals", 1965:106f.) will not hold: the syllabication referred to by him is of later origin.

[33] Feydit (1968:353–56) now reaches the same conclusion on other grounds.

TA seem demonstrably secondary, their complete elimination has been as unsuccessful as the elimination of the vowel *a*. Furthermore, since there was a phoneme *h* in Early IE, it seems clear that the *MA* and *TA* were originally *M* + *h* and *T* + *h*, but by IE times they were monophonematic (Szemerényi 1967b:94f.). It is however, possible that, as in Indian (cf. Chatterji 1964: esp. 408), a difference between *kh* and *gĥ* was evolved, i.e. the *TA* had a voiceless glottal spirant, the *MA* a corresponding voiced one.

6. *The Stop System*

The views of various schools can be summed up in the following diagram (see also Szemerényi 1967b:96f.):

p	t	(k′)	k	k^w
ph	th	(k′h)	kh	k^wh
b	d	(g′)	g	g^w
bh	dh	(g′h)	gh	g^wh.

As we have seen, the second row of the diagram has been under strong attack for several decades now, but probably to no avail.

Far more interesting is a fact of distribution which has of course long been known (cf. Meillet 1937:89; Hirt 1927a:214): initial *b* is, in contrast to internal *b*, so rare or rather so ill-attested that doubts have been entertained about its existence in that position in IE. Pedersen has pointed out (1951:10f., esp. 14) that the absence of initial *b-* would be difficult to understand whereas initial *p-* has been lost in many languages. He therefore suggested that the IE voiced stops derived from earlier voiceless stops, and, conversely, the voiceless stops from voiced stops.[34] Martinet (1953a:70 n.) objected to the musical chair development assumed and suggested as a solution that the IE voiced stops developed from glottalized stops which would account for the absence of the labial since glottalization is incompatible with labial articulation; he overlooked, however, that *b* is not absent from the system but only, if at all, from the initial position in morphemes.

7. *Spirants*

One spirant is well established for the IE phonological system: *s* with its allophone *z* which occurred before voiced (aspirate) stops only, e.g. *ozdos* 'branch' (Gothic *asts*), **mizdho-* 'wage' (Engl. *mead* 'reward').

No doubt, a larger complement of spirants would give a better balanced picture. But Brugmann's interdental spirants (*þ*, ð, *þh*, ðh) have come under increasing pressure.

[34] This solution had been offered for internal *b* by Hirt, too (1927a:215).

The new era was introduced by Kretschmer, who in 1931 pointed out that Hitt. *tekan* (gen. *tagnas*) 'earth' and Tochar. A *tkaṃ* 'place' ruled out the spirant assumed heretofore for Greek χθών and Skt. *kṣam-* 'earth' and rather suggested a primitive form **dh(e)ghom-* which by metathesis to **ghdhom-* gave the Greek form, through **dhžham-* the Skt. *kṣam-*, and by reduction of the initial cluster to *(dh)ghom-* the Lat. *humus* etc. This was the first time that a rational explanation became visible and tangible, and it is regrettable that a few years later Benveniste should have convinced himself (1937) that the Greek κτ, Skt. *kṣ*, and similar groups were to be traced to IE k^s, g^z, g^zh, symbols which cannot be invested with any real phonetic meaning.[35] Real advance has been achieved in the direction pointed by Kretschmer, and the work of Durante, Burrow, Merlingen deserves mention.[36] It is possible that the evidence in question preserves the traces of several phonemes. But wherever the material admits of a more precise analysis, we find awkward consonant clusters which have been dealt with differently in the various languages.[37]

The chances of establishing further spirants for Indo-European are very slim indeed. The attempt to ascribe to the IE system an affricate /ts/ which survives (spelt *z*) in Hittite, but was merged in all other languages with *s*, can hardly be regarded as successful.[38]

8. *The Phonological System*

The bulk of our period was marked by a steady reduction of the IE phoneme inventory. By 1935, the year in which Kuryłowicz' *Études I* was published, the vowel-system was reduced to 1 short vowel (*e*), the long vowels were replaced by 3 to 4 laryngeals, and the stop-system declined from the Brugmannian 20 (5 orders of 4 articulation types each) to a mere 12 (4 orders, 3 articulation types). The postwar period attempted a modest 'reconstruction' in the consonantism: the vocalism threatened to disappear, and as a compensation laryngeals began to expand, their expansion rapidly reaching alarming proportions. The reaction was again marked by a work of Kuryłowicz, the *Apophonie* of 1956. From that time the old vowel and consonant system has started to reclaim its rights. The vocalism has been almost completely reinstalled by Kuryłowicz himself. Szemerényi has, in two stages as it were, reinstalled the five-vowel system and also much of the old consonantism. At the end of the period the old and the new views of the IE phonological system present themselves as follows (see Szemerényi 1967b:96–7):

[35] Note that this discovery had been anticipated by Cuny, 1930:150–1, 1935:283f.

[36] For references see Szemerényi 1967b:85 fnn. 59, 61.

[37] A very full bibliography (up to 1965) is given by Wright 1965:1017–22. For further references see Schindler 1967:191–205 (*Sprache* 13); Szemerényi 1968f:130[10], 1970:47.

[38] The attempt — by Benveniste (1954b:29f.) — is severely critized and rejected by Lazzeroni 1962:12–22 ("Sibilanti indoeuropee e sibilanti ittite").

Old						New					
p	t	k	k^w			p	t	k′	k	k^w	
b	d	g	g^w			b	d	g′	g	g^w	
b^h	d^h	g^h	g^{wh}			b^h	d^h	g'^h	g^h	g^{wh}	
						p^h	t^h	k'^h	k^h	k^{wh}	
y	w	l	r	m	n	y	w	l r	m	n	
s	h	x	γ	ʔ				s h			
		e				a	e	o	i	u	ə
						ā	ē	ō	ī	ū	

II. MORPHONOLOGY

While American and Soviet scholars still admit, without misgivings, the existence of a special field of study called by Trubetzkoy morphonology,[39] in Europe the situation has become critical lately: morphonology is either dismissed altogether or its problems are reapportioned as between phonology and morphology or allocated to either of these.[40]

With no wish to enter the lists for or against, I have retained this chapter heading for a number of problems which I find I cannot conveniently treat either in phonology or morphology.

Such are vowel and consonant alternations in morphemes, and morpheme- and syllable-structure. I have also added accent since it does not belong in phonology and would scandalize in morphology (I have nevertheless given it this place in 1968b:22), although, in the IE field at any rate, it is obviously attached to the word and higher units.[41]

1. *Accent*

Studies in IE accent and its metamorphoses on its way to becoming the accent of the various IE languages were twice summed up by Hermann Hirt: first in 1895, and a second time in 1929, in volume V, dedicated entirely to these problems, of his *Indogermanische Grammatik*. But in our period the towering figure in accentological

[39] Note, e.g., Hockett 1958:271f.; Hall 1964:138–44; Lamb 1966:550f.; (against Martinet) Postal 1966:168f.; Stankiewicz 1966:503f., 1967:1895–905; Hockett 1968:208–22, esp. end. For the Soviet views see O. Axmanova 1966a:52–62, and 1966b, s.v. fonomorfologija; Bernštejn 1968:43–59.

[40] Cf. Martinet 1960, §3–41, 1965:15–30; Komárek 1966:145–61; Kuryłowicz, "Phonologie und Morphonologie" (1967:158–69); Ďurovič, "Das Problem der Morphonologie" (1967:556–68): no room for it, a view also maintained in the new Pléiade volume *Le langage*, ed. by Martinet, 1968:241.

[41] It is comforting to see that in his latest work (1968), Kuryłowicz starts off (p. 7) with the following sentence: 'Akzent und Ablaut werden in dieser Grammatik, da beide einen Übergang von der Lautzur Formenlehre bilden, in einem Band behandelt.' I had also adopted this division for my *Introduction to IE linguistics* which was finished when I received Kuryłowicz's new volume.

studies has been Jerzy Kuryłowicz, from the early papers, i.e. "Le problème des intonations balto-slaves" (1931) and "L'indépendence historique des intonations baltiques et grecques" (1934), down to the definitive presentations in "L'accentuation des langues indo-européennes" (1952, 1958[2]) and now in *Indogermanische Grammatik* II: *Akzent — Ablaut*.

It had been recognized since the early eighties (see Bezzenberger 1883:66ff.; Hanssen 1885; also Hirt's 1891 dissertation) that the difference between acute and circumflex accent in Greek final syllables corresponded to the same kind of difference in Lithuanian final syllables and that both continued an IE opposition of acute and circumflex, i.e. rising and falling syllable accent or intonation. This doctrine was attacked by Kuryłowicz in his very first papers. He argued that in Greek the opposition between the two accents was phonological in final syllables only, while in Lithuanian it was not phonological in final syllables but only in initial syllables. Moreover, the Greek intonation was the result of contractions: the general contrast between άε and αέ, i.e. ᾶ and ᾰ́, became phonological in the final syllable and only there. In Lithuanian, on the other hand, the intonation originated in initial syllables when the accent was withdrawn from short medial syllables onto them: a newly accented long vowel had the acute whereas originally accented long vowels changed their acute to a circumflex; thus, e.g., IE **bhrắterm̥* and **mātérm̥* gave Lith. **brõterim* and **mōtérim* and, after the accent-shift in the latter, **brõterim* and **mõterim*. The oft repeated equations: Lith. *algà* 'pay' — Greek θεά, gen. *algõs* — θεᾶς were a mirage. For IE one could not assume such intonations.

The new doctrine was attacked right away and the opposition has even increased lately, perhaps not surprisingly, primarily on the part of Slavists. Against it are, e.g., Stang 1957:5f., 1966:125f., esp. 132f.; Sadnik 1959; Shevelov 1964:38–80; cp. also Illič–Svityč 1963:15f.[42] Amongst others it has been pointed out that the purely mechanic differentiation of intonation assumed by Kuryłowicz for Lithuanian final syllables — open syllables shortened and obtained an acute, close syllables retained their long vowels and obtained a circumflex — cannot be right since some vowels retained their length even in open syllables, and others shortened even in close syllables. It has also been argued that the assumption, vital for the theory, that accent was withdrawn from a short medial syllable onto an initial syllable, was contradicted by cases, in which accent persevered on a medial short (see Stang 1966: 135f., 132f.; Aitzetmüller 1962).

Thus most scholars would today maintain Bezzenberger's doctrine that the intonational differences seen in Greek and Lithuanian final syllables are inherited from Indo-European. However, Kuryłowicz seems right in denying that this difference is also reflected in the Rigveda and the Gāthās where final *-ām* is often used as disyllabic *-aām*; this is, as he says (repeatedly, most recently 1968:15f.), not witness to the preservation of an old circumflex but an analogical phenomenon. On the other

[42] I merely note that within the covers of the same book, Kuryłowicz's views are rejected by Kacnel'son but accepted as proved by Makaev (*SGGJ* II:163 and 304).

hand, the complex developments of Germanic final syllables can hardly be divorced from the contrasts seen in final syllables in Greek and Balto-Slavic (Kuryłowicz 1968: 15; cf. Hamp 1959: esp. 35).

Concerning the nature of IE accent we can also register some new developments. Before our period it had generally been agreed that there were two types of accent: stress and pitch, or dynamic and musical. This view was from 1924 opposed by Alfred Schmitt who maintained that the accent peak was always an intensity peak and therefore musical accent was impossible, only dynamic accent existed which, however, could be strongly centralized or weakly centralized (Schmitt 1924:71, 73f., 79; cf. also 1931:8; 1953:5f., 22f.). In one of his early papers, Jakobson showed that, although this view was correct phonetically, phonologically the old view was well founded: in dynamic accent the stress contour is identical with the duration of the whole syllabic phoneme, while in musical accent this is only one of the phonological variants or does not occur at all, the main characteristic being that one mora of the accented syllable is set off as against another mora (see Jakobson 1931 (= 1962:117–36) p. 166f. (= 119); cf. Trubetzkoy 1939b:169, 179). The Greek contrast of θεά : θεᾶς represents ∪ ◡́ : ◡́ ∪, the Lithuanian contrast of *súnui* 'to the son': *būdas* 'mode' is *súunui: buúdas*. The old contrast of dynamic and musical is thus replaced by syllabic and moric accent. IE accent obviously belonged to the latter type.

This naturally applies to the latest stage of Indo-European, before the departure of the speakers of what was to become Indian, Greek, etc. But there are good reasons for believing that this moric (i.e. pitch) accent must have been preceded by a syllabic (i.e. stress) accent. Hirt always maintained that the accent that played havoc with the vocalism reducing it to the shambles known in ablaut as the nil-grade cannot have been the same kind of accent under which the *o*-grade arose and plurivocalic forms like **bherō* **bheromes* again became possible. It seems clear that the nil-grade period was marked by a syllabic (dynamic) accent which later gave way to a moric accent that survives in Vedic Indian and in Ancient Greek down to the end of the classical period (Hirt 1928:349f.; 1929:28; cf. also Schmitt 1953:23; Schmitt-Brandt 1967b: 127 assumes no difference). Naturally, even the moric accent was not deprived of an element of intensity (Szemerényi 1964a:279f., 290f.). On Allen's important works see Szemerényi 1970:69f.

2. *Ablaut*

As earlier, in our period, too, the main interest centered on the origin of ablaut and its various grades, not on its functioning in the synchronous system. It will be best if we deal with the diachronic problems of the nil-grade, *o*-grade and lengthened grade in succession.

A. Nil-grade. The contrast of IE **és-mi* 'I am': **s-énti* 'they are' (Skt. *ás-mi: s-ánti*), **éi-mi* 'I go': **y-énti* 'they go' (Skt. *é-mi: y-ánti*), **kleu-* 'hear': **klu-tó-s* 'heard of,

famous' clearly shows that the nil-grade is linked to accent-shifts. In addition to the type just exemplified, in which the weakening occurs before the accent, there are instances of the opposite, too, namely weakening after the accent, e.g. **gonu* 'knee': **prógnu* (Greek γόνυ : πρόχνυ). That both types, that is nil-grade in general, are due to the accent-shift is so obvious[43] that there is not much discussion of this question in our period;[44] see, nevertheless, the end of the section on accent above. There was, on the other hand, some discussion of the question whether the weakenings whose end-results are called nil-grades occurred in one or several steps, a question repeatedly discussed by Kuryłowicz (1935:82f., 1956:97).

B. o-grade. In contrast to the quantitative ablaut represented by the nil-grade, the qualitative ablaut describes the change of the root-vowel to *o* or *ō*, type φέρω — φόρος ('carry' — 'tribute'), πατήρ : εὐπάτωρ ('father' — 'having a noble father'), φρήν : ἄφρων ('mind' — 'mindless'), λείπω — λοιπός ('leave' — 'left over'), etc. In these, and many other instances of *o*-grade the *o* is unaccented and the forms contrast with forms accenting the basic vowel *e* (or its lengthened form *ē*). From such cases Güntert and Hirt inferred that *e* changed to *o* when it received the counter-accent, i.e., primarily in compounds and when the accent was shifted. This change occurred after the nil-grade period (Güntert 1916; Hirt 1921:172f.). This hypothesis was taken over by Kuryłowicz, too, in his first work but he thought that the *o*-grade preceded the nil-grade period (Kuryłowicz 1935:97f., 102)[45]. In his postwar work, however, Kuryłowicz has radically changed his position (1950, 1956:36–96, 1964b:52). First of all, he now marshals cogent arguments which suggest for the *e* > *o* change a period prior to the nil-grade period. Since the connexion of nil-grade and accent is still pretty clear, a similar connexion of the *o*-grade with the accent would have to be even clearer if the *o*-grade had arisen after the nil-grade; in fact, if there ever was any such connexion, it is obliterated, there are many cases of accented *ó* (cf. Greek αἰδώς ἠώς φώρ φόρος γόνυ), and it is palpably true that the *o*-grade had long become a purely morphological device.[46] Secondly and more importantly, he now finds the explanation of the *o*-grade as due to the accent unsatisfactory on general grounds: experience shows that, whereas vowel weakening and loss is closely linked to accent, a change of timbre is primarily due to the environment. Hence he now assumes that the

[43] The statement: 'le ton est lié à l'alternance, il ne la provoque pas' (Benveniste 1935:52) sounds rather strange when one thinks of the manifold vowel weakenings that have occurred as a consequence of the character of the French or German accent.

[44] The only deviation seems Borgström's assumption (1949; cf. 1954b), that in Proto-IE there were only open syllables with the single vowel *ä*, i.e. type *Cä*, and at a certain time a mechanical rule operated, according to which every second vowel from the end was lost. Thus 3.Sg. **häsä-tä* gave **hästä*, later *est*, 3.Pl. *häsä-nätä* gave **hsäntä*, later *sent*. But the rule does not work. The 1.Pl., if it was **häsä-mä*, gave **häsmä* (**esm*), if *häsä-mäsä*, **hsämsä* (**sems*), but certainly not the attested **smes*.

[45] Lehmann still maintains this view in 1952:110, but thinks that the change is 'the last of the ablaut changes', though it precedes the loss of laryngeals.

[46] Kuryłowicz 1956:96: 'L'apophonie qualitative est antérieure à tous les changements phonologiquesg d'ordre quantitatif.'

change was triggered off by a purely phonetic change by which the weakened forms of *eR* and *oR* (R = r l m n), i.e. $_{e}R$ and $_{o}R$, were merged in $_{o}R$. As a result, the Perfect Sg. **wert-* contrasted with Plur. **w_{o}rt-* (not, as previously, **w_{e}rt-*); the overshort $_{o}$ was, however, felt to belong with the phoneme *o* so that **wert-/*w_{o}rt-* was transformed to **wort-/*w_{o}rt-*, later **wort-/*wṛt-*. In the same way, root-nouns of the type **wert-* were via the ablaut relation **wert-/*w_{o}rt-* replaced by **wort-/*wṛt-*. Thus we can see the origin of the *o*-grade both in the verbal and in the nominal inflexion. In his latest work, Kuryłowicz broadens the field of *R* to include the semivowels and states that 'the origin of the *o-grade*, i.e. of the secondary, morphological replacement of *e* by *o*, is neither later nor earlier than the nil-grade; it is a morphological consequence of the collapse of *eR* and *oR* (and *Re* and *Ro*) in the nil-grade' (Kuryłowicz 1968:257).[47]

This theory, as developed in the *Apophonie*, was vigorously attacked by Kuryłowicz's compatriot Witold Mańczak in 1960, who pointed out that the mainstay of the theory, that the full-grade forms (**wert-*) were modified by the weak-grade forms (**w_{o}rt-*), was contrary to all experience and quite unacceptable; no less unlikely was in his view the assumed collapse of $_{e}R$ and $_{o}R$. Mańczak himself advanced two phonetic laws to explain the emergence of the *o*-grade:

a) accented and pretonic *e* changed before back vowels (*a*/*o*/*u*) to *o*; e.g. **dedérka* 'I have seen' became **dedórka*, and after it 3.Sg. **dedérke* also changed to **dedórke*;

b) subsequently, posttonic *e* developed before sonants to *o*; e.g. **légete* but **légomes*, πατήρ but ἀπάτωρ, φρήν but ἄφρων.

A novel solution was proposed by Pulleyblank in 1965.[48] He is disinclined to admit an IE one-vowel system but a two-vowel system of *e–o* based on a horizontal contrast seems to him on general grounds less likely — because less stable — than a vertical contrast of *ə–a*; this also has in his view the advantage that the 'qualitative ablaut' *ə–a* — which is structurally, if not in substance, identical with *e–o* — obtains an illuminating parallel in a Caucasian language (Kabardian) where the same contrast is used to signal the semantic opposition between extrovert and introvert. More in the traditional line is the suggestion made by Schmitt-Brandt (1967b:124f.) that the basic vowel *a* changed to *o* when not accented but morphological or phonetic factors prevented the normal development to nil-grade; as to the time of the change, quantitative and qualitative ablaut are said to be two phases of the same process.

It seems fairly clear that the *o*-grade is not due to the accent, but to the environment. The influence of the nasal in the 1.Sg. Impf. **ebherom* from **ebher-e-m*, or in the similar change of the thematic Acc.Sg. *-e-m* to *-o-m* is unmistakable; likewise the role of the sonant in posttonic final syllables, e.g. ἄκμων, δώτωρ. A preceding labial also seems to have coloured a following vowel in **pōs* 'foot', **nepōs* 'grandson, nephew',

[47] I must confess that the definition of *R* as including the semivowels is to my mind quite arbitrary; even previously, the change of $_{e}R$ to $_{o}R$ was less likely with *l r* than with *m n*, but with the semivowels a change from $_{e}i$ to $_{o}i$ seems quite impossible.

[48] See also the summary at *Lingua* 14, 1965:232f. For detailed criticism see Szemerényi 1967b:83f. — It is not clear to me how the 'syllabophonemes' can explain the *e*/*o* ablaut (Klyčkov 1963:11).

or **k^{w}etwores* 'four', although the change cannot have been general. The conditions, under which such umlaut-phenomena took place, call for urgent investigation.

As to the time of the change, it is important to note that it must have occurred before the emergence of the lengthened grade, since long vowels generally resist the influence of the environment. This means that the *o*-grade emerged before **pəter-* developed into **pətēr*; the sequence was:

1) *pəter-$>$*pətor-
2) *pəter-$>$*pətēr, *pətor-$>$*pətōr.

C. Lengthened grade. In 1921, Hirt reaffirmed the old Streitberg-Michels doctrine, according to which the loss of a vowel, if it also means the loss of a syllable, entails the lengthening of the preceding accented vowel (Hirt 1921:37f.). This accounts for the contrast πατήρ — πατέρα: the nom. started as **pətéro* and became **pətēr*, the acc. as **pətérom* and became **pətérm̥*, not **pətērm̥*, because the loss of the vowel in the final syllable did not entail loss of a syllable, seeing that the syllabic function could be, and was, taken over by *m*.

But the objections raised against the theory by earlier scholars were still not answered. It could still not be explained how besides a verbal type **tēksti* from **tekseti* (Skt. *tāṣṭi* 'fashions') or nominal **kērd* 'heart' from **kerede* there could also be **bherti* (and not **bhērti*) from **bhereti* 'carries' or **deiwos* 'god' (and not **dēiwos*) from **deyewos*, etc. Some scholars despaired therefore of a rational explanation and resorted to an irrational explanation by means of *sound-symbolic* or *rhythmic-expressive lengthening*, summed up by, e.g., Loewe (1933:60, 62) in the following manner: 'IE lengthening was mostly of a sound-symbolic, in particular dynamic, character, in that the intensity of the notion was expressed by the length of the vowel.' Much the same views were advanced by Pisani (1934b), and Schwyzer (1939:355f.) and Specht (1944:338, 360) were also favourably disposed toward such assumptions.

In spite of Pisani's recent statement (1961b:27) that these views are gaining ground at least as far as word internal position is concerned, the evidence rather points to an open or tacit rejection on the part of most scholars. The theory of Streitberg was revived by Kuryłowicz in 1935 and is still followed by Borgström (1949:138, 1954a: 280; see also Lehmann 1952:111) but has now been replaced by a quite different hypothesis in Kuryłowicz's postwar work.

In his 1956 *Apophonie* Kuryłowicz adopts a new approach (pp. 142f., 264f.; also 1964a:198, 209f.). The lengthened grade is no longer a phonetic or phonological, but a morphological problem. The lengthened grade of the nominative in consonantal, in particular sonant, stems is to be explained as follows. The nominative of, say, *-r*-stems ended in *-er* which at one point became ambiguous because tautosyllabic *ēr* had been shortened to *er*, while non-sonant stems retained the sequence *ēT*; therefore the ambiguous *-er* was replaced by *-ēr*, and *-er* survived in the vocative only. The lengthened grade of non-final syllables — e.g. *s*-aorists of the type *rēxī tēxī* in Latin or nominal forms like **swēkuros* — is due to analogical change after the basic relation

ei:i in which *ei* was interpreted as derived from *i* by adding *e* so that to a basic *e* a derivative *ē* was formed (=*e*+*e*). The latest survey (Kuryłowicz 1968: 298–99) differs in some details; thus the nom. of light roots (type *-eT-* where *T*=any consonant in contrast to *R*=any sonant) is said to have been changed from *-eT(s)* to *-ēT(s)* after the proportional formula

dat. *-ṛ̥RTéi*: nom. *-éRT(s)* = dat. *-eT-éi*: nom. x, wherefrom x = *-ēT(s)* from *-e*+*eT(s)*. In the neuter the lengthening appears in **kērd* 'heart' formed on the analogy of **pətréi*: **pətēr* = **kṛ̥déi*:**kērd*.

It is rather difficult to give credence to these various constructions. It is not clear why, e.g., a nominative should be built on the oblique cases — though no doubt it existed before them; and even if that was the case, the nominative could obviously only be changed if there were nominatives with lengthened grade in the system already. A real explanation of the lengthened grade must needs be phonological. The groundwork was securely laid by M. Leumann who showed (1952) that derivative formations with lengthened grade, the so called vrddhi formations — type **swēkuros* 'belonging to the **swekuros*' — ultimately all derived from monosyllabic words, in which the nom.sing. had the lengthened grade. Thus, e.g., Skt. *nārī* 'woman' is formed on *nā(r)* 'man', or IE **nēros* 'belonging to a man' from **nēr* 'man'.

The explanation of the lengthened grade[49] in the nom.sing. — which Leumann did not attempt — must obviously start from the fact that the lengthening occurs with certain nominal classes only, primarily with sonant stems (*R*) and *s*-stems, whereas the other classes have generally speaking *s* in the nom. of masc. and fem. nouns. Cf. **kuwōn* 'dog', **ghiyōm* 'winter, snow', **mātēr* 'mother', **ausōs* 'dawn', etc. as against **ekwo-s* 'horse', **owi-s* 'sheep', *sūnu-s* 'son', **nok^{w}t-s* 'night', etc. Functionally it is clear that originally all animate nouns were characterized with *s*; if in IE some classes lack *s* but show lengthening instead, then it must be inferred that the latter fact is connected with the former. In other words, an original **kuwon-s* developed into **kuwōn*, or **ausos-s* into **ausōs*. The latter form suggests that **kuwons* was also first assimilated to **kuwonn* and in this the length of the consonant was converted into length of the preceding vowel. This explanation also accounts for the fact that some stop-stems, especially dental stems, show lengthening as well as the ending *-s*. Thus, e.g., **pod-* 'foot' formed its nom.sg. as **pod-s* which was naturally assimilated to **poss* and this became **pōs*; likewise the noun *nepŏt-* 'grandson' had nom. **nepōs* from **nepot-s*. Even the neuter **kēr* 'heart' (sic! not **kērd*) is simply transformed from **kerr*, the assimilated form of **kerd*. The lengthened grade of the nominative spread, as Leumann saw, to the nominal derivatives but through them also to denominative verbs, and later even deverbative verbs.

D. Syncope. According to the prevailing view, the vowels *e*, *o* and *a* can be lost — a phenomenon known and discussed above (under A.) as the nil-grade. For those

[49] This explanation was first proposed at Oxford in 1957, Szemerényi 1962a:12f., 21, 1970:109.

interested in linguistic universals the question arises whether *i* and *u* are not subject to the same type of loss since one is tempted to advance as an implicational universal that in languages in which the mid-vowels *e* and *o* are lost, the high vowels *i* and *u* are also subject to loss but not vice versa. Those who acknowledge *i* and *u* as members of the IE vowel-system (before the period of nil-grade vowel losses) must also expect that these vowels were under certain conditions lost. Szemerényi has attempted to define more closely the conditions which favour such losses both in IE and in the early periods of languages which retain the moric accent (Szemerényi 1964a:258f., 290f.).

3. *Morpheme Structure*

At first sight, IE root-morphemes do not reveal structural laws which could be reduced to simple formulae. Prior to our period and, in fact, well into our period there was a school of thought which admitted monosyllabic and disyllabic roots for Indo-European.[50] This can, I think, today be regarded as resolved: all disyllabic roots are expanded from monosyllabic roots.

The structure of the monosyllabic root-morphemes seems to be most varied. We find the following canonical forms: VC, CVC, CCVC, CVCC, CCVCC, CCCVC, CCCVCC, with a short vowel, and CV, CCV with a long vowel, e.g. IE **ed-* 'eat', **med-* 'measure', **trem-* 'tremble', **serp-* 'crawl', **dhreugh-* 'deceive', **strep-* 'make noise', **spreig-* 'swell', **dō-* '*give*', **drā-* 'run'. Most of them already show the vowel *e* as their basic vowel, and with the help of laryngeals even **dō-* and **drā-* can be interpreted as resulting from **deO- *dreA-* (de Saussure) or **deH$_3$- *dreH$_2$-* (Kuryłowicz), which gives *e* as the practically general root-vowel.

This root-vowel is surrounded by consonants: in the simplest form the basic vowel is followed by one consonant (VC, the converse, CV, is confined to pronominal stems and particles like **ne* 'not'), in the most complex it is preceded by three consonants and followed by two (CCCVCC). On these clusters various restrictions are imposed. First of all, the consonants are arranged on both sides of the vowel in order of decreasing sonority, as was stated by de Saussure (1916:70–95; cf. Ammer 1952:213): we find **klep-*, **sret-*, **kers-* but not **lkep-*, **rset-*, **kesr-*, etc. Secondly, in general all kinds of stops are allowed before and after the basic vowel but a sequence of two voiced stops or voiced aspirate and voiceless stop (or vice versa) is not found. In other words, the types M-MA, M-T, MA-M, MA-MA, T-M, T-T are admissible, but not M-M, MA-T, T-MA, although sT-MA is possible (e.g. **steigh-* 'mount').[51] According to Cuny (1912:128f., cf. 1943:114f.) the inadmissible sequences MA-T and

[50] See Hirt 1900:24f., 1921:103f. (107:Saussure's role and the history of the research in general).

[51] As far as I can see these structural laws were first clearly stated by Meillet, *Introduction*[1], 1903:145. see 1937:173f. The restriction on T-MA and MA-T was first observed by de Saussure, see Meillet 1913:60 (a reference given me by Dr. A. Bammesberger), and Benveniste 1935:171[1]. It is interesting to note that Grassmann saw (1862:115) that in Greek there is no root with the structure MV(n)M.

T-MA also existed at one time but they were all assimilated to T-T and MA-MA, and the only example of the original sequence M-M, Skt. *gad-* was dissimilated to **g^{w}et-*. The absence of roots with T-MA and MA-T is explained by pre-IE assimilation by Kuryłowicz, too (1962:108, 1964a:13). Since it has also been stated that the consonants appearing before and after the basic vowel cannot be identical (e.g. **pep-*, **mem-*) (Benveniste 1935:170–71), it must be pointed out that IE **ses-* is attested by Skt. *sas-* and Hitt. *ses-* 'lie, sleep' (cf. Mayrhofer 1966:250f.). More serious is the restriction that clusters of two sonants or two stops cannot appear before or after the basic vowel, i.e. **teur(k)-* or **tekt-* are impossible (Meillet 1937: 157).

That the root-morphemes obtained by plain comparison could further be reduced by cutting off certain elements, the so-called *determinatives*, had been known since Curtius' days and especially from the rich collections of Persson (1912; cf. Hirt 1927b:236–42; Kronasser 1962:420f.). A comparison of Gothic *giutan* 'pour' from IE **gheud-* (cp. Lat. *fundō fūdī*) with Greek χέ(ϝ)ω χυτός from **gheu-* reveals that the Gothic form has an additional *-d-* after the root proper. A shorter form must also be inferred when parallel forms like Greek (ϝ)ἔλπ-ομαι 'I hope' and (ϝ)ἔλδομαι 'desire, long for' are found side by side — in the present case **wel-*. In the same way, the coexistence of IE **melp-*, **meldh-*, **melw-/*mleu-* 'declare, recite, sing' — cp. Greek μέλπω 'sing', Hitt. *mald-* 'recite, vow', Avest. *mrav-*=Skt. *brav-* 'say' — points to a more primitive root **mel-* from which they were enlarged with *p*, *dh*, *w* respectively (see Szemerényi 1954b).

The removal of root-determinatives often leaves behind roots consisting of three phonemes, cf. **wel-*, **mel-*, **gheu-* above. Laryngeals, on the other hand, can be used to turn two-phoneme roots into three-phoneme entities, cf. **ed-* 'eat' = **H_1ed-* or **ag-* 'lead' = **H_2eg-*. On the strength of these empirical observations Benveniste declared in 1935 that all IE roots were monosyllabic and, what is more, consisted of three phonemes — they were 'trilitère' — of which the middle one invariably was *e* while the flanking unlike consonants were subject to the restrictions discussed above (1935:147–73). Empirically attested longer forms like **yeug-* 'join' or **leik^{w}-* 'leave' were to be explained as expanded from three-phoneme roots by means of *suffixes* — morphemes alternating between *eC* and *C* — and *enlargements* (élargissements) — consisting of a consonant only. Every root could be expanded with suffixes so that either the root retained its vowel and the suffix lost its own vowel or vice versa; the resulting two '*themes*' can be illustrated with the root **pet-* 'fly' and the suffix *-er-/-r-*: theme I is **pét-r-* (e.g. Skt. *pátr-a-* 'wing'), theme II is **pt-ér-* (e.g. Greek πτερ-όν 'wing'). A root expanded with a suffix could take an enlargement either after theme II or, as an infix, before the suffix of theme II; cf. from **pr-ek-* with the enlargement *s* the form **pr-ek-s-*,[52] or with the infix *n* added to a theme II (**yw-eg-*) the form **yu-n-eg-*. An initial two-consonant cluster usually pointed to a theme II: **spek-* in

[52] Though Benveniste expressly states (1935:153) that an enlargement cannot be added to a theme I, nevertheless such forms do exist in the aorist-stems of the type **yeu-g-s-*.

Lat. *speciō* was **sp-ek-* from a root **sep-* (1935:157, 164); *stā-* 'stand' was **steH₂-* and therefore **st-eH₂-* from a root **set-* (1935:158). But the frequent type **sCeC-* might also contain a prefix, e.g. **s-mer-* 'think, remember' which was not **sm-er-* from **sem-* but simply **mer-* (1935:165).

The new doctrine, especially its core concerning the monosyllabic three-phoneme root and its expanded variants I and II, was at first received with an enthusiasm only seldom accorded a linguistic hypothesis. But since the war criticism has been gaining force. Many critics object to the reduction of longer roots to the three-phoneme norm on the grounds that there are far too many longer roots for the general reduction to be credible (e.g. Ammer 1952:193f.; Stang 1967:1890f.; Schmitt-Brandt 1967b:8f., esp. 12, 1967a:167). Although the objection is valid for the outsider, it is not decisive in the eyes of those who adhere to the doctrine. But even these must admit the force of an objection which shows that there is an internal contradiction in the system, as there is since it is assumed that beside the monosyllabic three-phoneme roots there were also suffixes of the form *eC*. For where should these forms have come from if the whole stock of roots, i.e. of words, consisted of forms of the type *CeC*? Furthermore, the assumption that all roots had *e* as their basic vowel is also untenable, cf. such root-nouns as **nas-* 'nose', **sal-* 'salt', **ghans-* 'goose', **kas-* 'grey', etc.

At the present time we can only say that the IE root was monosyllabic but it certainly was not of a 'trilitère' structure but could have the most varied forms. Kuryłowicz has held this view ever since the first detailed discussion in his *Études* (1935:121, 1956:106f., 1968:199f.).[53] Szemerényi rejects the assumption of initial laryngeals when there is no evidence in Hittite and therefore acknowledges even 'bilitère' root-morphemes like IE **ed-* 'eat', **es-* 'be' etc., which, as has been pointed out above, are necessary for the suffixes in any case. Schmitt-Brandt also finds a difficulty in the assumption that, although all roots have three phonemes, there should be suffixes with two, but, since he does not acknowledge a root-type *eC*, he can only suggest that of the various root-types, i.e. CV, CVC, CCVC, CVCC, CVCV, CVCVC, the type CVC could take over the end-part of C(V)CVC or even of another CVC; cf. **pl-ek-* from **pel-* and **pek-* (Schmitt-Brandt 1967b: 12–14). Statistical investigations into the frequency of various consonants in IE roots have recently been carried out by G. Jucquois (1966).

In recent years the phenomenon known as 'Schwebeablaut' has occupied scholars not only in America[54] but also in Europe. The alternation of such types as **ters-/*tres-*, **terp-/*trep-* etc., repeatedly discussed since the seventies, gave rise to Benveniste's theory of the theme I and theme II. But there are cases, in which the theme I is semantically a clear derivative of the theme II. Thus IE **deiwo-* 'god, i.e. heavenly' and **dyeu-* 'heaven' can formally be analyzed as I **dei-w-*: II **dy-eu-* but for this analysis to be correct the meaning of I and II would have to be identical, which is not the

[53] It is interesting that K. has never defended his diametrically opposed views against Benveniste; he has preferred to ignore B.'s construct.

[54] See Anttila 1966. For the history of the problem see pp. 1–17.

case. Kuryłowicz is manifestly right in maintaining that **deiwo-* is secondarily built on **diw-*, the nil-grade of **dyeu-*; the procedure was possible because the ablaut pattern *ei/i* was widespread. Likewise the form **gheimo-*, underlying Lith. *žiemà* and Slav. *zima* 'winter', is a secondary full-grade to **ghim-*, the nil-grade of **ghiyem-* 'winter' (see Kuryłowicz 1956:130f., 151; and add, especially for Slavic, Vaillant 1950:302; Schütz 1967). Since he believes that the nil-grade of *ei* and *eu* cannot be *i* and *u* but is *ī* and *ū*, Schmitt-Brandt is forced into the untenable position that forms like **bhudh- *dhigh-* are primary and **bheudh- *dheigh-* are secondarily formed on them (Schmitt-Brandt 1967b:23).

4. *Morpheme Juncture*

As a rule, morpheme juncture causes either no change in the final of the first morpheme or there is anticipatory assimilation, e.g. **yug-tó-* becomes **yuktó-*. This seems to be the case even when the first morpheme ends with an MA; the general pattern seems to be reflected by **legh-tro-* giving Greek λέκτρον 'bed' from **legh-* (λεχ-) 'lie'. An entirely different change occurs in Aryan, known as *Bartholomae's law*. According to this law, in a juncture group MA+T the voice is preserved (i.e. T also becomes M) and the aspiration is transferred to the end of the cluster: MA+T>M+MA, e.g. Skt. *budh-* 'wake' gives *budh+ta-=buddha-*, Skt. *dah-* 'burn' (=*dagh-*) gives *dagh+ta-=dagdha-*. Kuryłowicz defends the old view that Bartholomae's law goes back to IE times. For, he says (1964a:13, but see also 1935:50f., 1956:379f., 1962:107f., 1968:339), the assimilation of sonority is in IE regressive (*b+t>pt*), therefore the progressive assimilation seen in *bh+t>(bhdh>) bdh* shows that *bh* (and MA in general) was not phonemically voiced, i.e. *ph* (and TA in general) did not exist, otherwise *bh+t* would have given *phth>pth*. Since, on the other hand, Bartholomae's law is reminiscent of the restrictions on morphemes, which proscribe such types as *p-dh, bh-t*, and replace them by assimilated *bh-dh*, Bartholomae's law looks like a case of contact assimilation of the same type and the same, i.e. IE, date. But it is difficult to see the validity of this argument. From the fact that, in contrast to an M which loses its voice before a T, an MA preserves its voice and makes the whole cluster voiced, one cannot possibly draw the conclusion that the MA was *therefore* phonemically not voiced; to say that *voicing* does not prove voiced character is rather like the old saw about *lucus a non lucendo*. Nor is the parallel with the IE root restrictions cogent: as we have seen (above 3.), Cuny thinks that original MA-T was assimilated to T-T and T-MA to MA-MA, so that the restriction is due to 'normal' assimilation, not comparable to the process in question. Since there are no clear examples of Bartholomae's law in languages other than Aryan — for the contrary see λέκτρον above — we are forced to conclude that it is of Aryan date; the fact that Avest. *dugdar-* 'daughter' has *gd* from *gh-t* which only arose after the loss of *i* (cf. Skt.

duhitar-) also proves that it was a late, not even common Aryan, change.[55]

A further change, often linked to the one just discussed, is known as *Siebs' law*. According to this law (Siebs 1901), an initial M became T, and an initial MA became T(A) when a (prefix) *s* came to be placed before them; cf. Gmc. **dauma-* 'steam' (MDutch *doom*) and **stauma-* 'steam' (OE *stēam*). The formula $s+bh>sph$ is advocated by Cuny (1936:73) while Illič-Svityč (1961) differentiates: unaspirated clusters (i.e. $s+k$ and $s+g$) appear in all languages as *sk-*, but $s+gh$ gives Skt. *skh-*, Greek σχ-, and *sk-* elsewhere. As far as $s+MA$ is concerned this is identical with the formula adopted by Kuryłowicz (1935:53f., 1956:378, 1962:107f.). He notices that the change would be confined to the initial position since medially *-zdh-* is kept in Indo-Iranian (1956:378–9); but he fails to notice that *zdh* is kept in Iranian initially, too, as is shown by Avestan *zdī* 'be'. Although the change occurs in word-initial position, Siebs' law concerns the morpheme juncture, because *s* must be regarded as a prefix.

Morpheme-final laryngeals have also prompted certain observations. According to Lindeman the juncture clusters *(-e)-Hy- (-e)-Hw-* normally develop into *-(ē)-y- (-ē)-w-* but in expressive forms into *(-e)-yy- (-e)-ww-*. Thus Gk. δοίην, Skt. *dēyām* 'I should give', are traced to **doyyēm* and this to **doH-yē-m* (Lindeman 1962, esp. 5, 21; 1964; see also Hiersche's 1968 review of Lindeman 1964). But in this instance it seems pretty clear that the retention of *-y-* in Greek (and Indian) is due to the 1.2. Plur. where δοῖμεν δοῖτε were regular, and the other instances are to be explained in more or less the same way.

The long familiar final alternations between M and T, MA and TA have now been reexamined by Stang who finds that the alternation occurs in the expanded secondary root only — alleged examples in three-phoneme roots are unreliable — and only in theme II, not in theme I, i.e. after a diphthong *sensu lato*, type *TeRK-*; he thinks that the alternation originated in the verbal inflexion: T appeared in presents without nasal, M in presents with nasal and in the perfect, cf. Lat. *pac-iscor*: *pangō* (Stang 1967:1890–4). Expressivity is regarded as the cause of such alternations by Otrębski (1963:16–19) who thinks that the voiced phoneme expresses a higher degree of intensity and is often used in pejorative words, especially in onomatopoeics. Laryngeals are invoked by Erhart (1956a)[56] to explain the alternation of M and MA.

Here belongs perhaps the alternation in vowel-length found in some cases at the juncture of two morphemes; e.g. Skt. *vīra-* 'hero' but Lat. *vĭro-*, Skt. *sūnus* 'son' but Goth. *sŭnus* etc. Leumann (1952:4) thought that in these two cases at least the original short vowel was lengthened in the emphatically pronounced vocatives.[57] Since the root of **sūnus* is **sū-* and that of **wīros* **wī-*, this explanation is rather unlikely. Much more plausible is the suggestion of the Ukrainian linguist Dybo that in the

[55] If my suggestion that Hitt. *isduwa-* 'become known' derives from IE **edh-tu-* (*Sprache* 12, 1967: 206 fn.) is correct, then the law is proved for Hittite, too. Cf. also J.E.B. Gray, "Aspirate Sandhi", *BSOAS* 27, 1964:615–9.

[56] I have not seen it but cf. Puhvel, *Lg* 35, 1959:648f.

[57] Expressive lengthening was assumed for **wīros* at least by Vendryes, too, see 1952:110–14.

Italo-Celtic group, and to a smaller extent, in Germanic, inherited long vowels and long sonants were shortened when the IE accent did not fall on them (Dybo 1961; see also Szemerényi 1964a:329); hence Skt. *sūnús* but Goth. *sŭnus*, Skt. *vīrás* but Lat. *vĭr*, OIrish *fer*, Goth. *wair*, and without shortening Lith. *vyras*, *sūnus* and OCS. *synŭ*.

5. *Syllabic Structure*

In our period two problems have received close attention. First, the general problem of syllabic structure in Indo-European and the IE languages was examined by E. Hermann (1923) in a detailed monograph at the beginning of our period. Secondly, Sievers' law about the allophonic variation of *y/iy* and *w/uw* depending on whether the preceding syllable was light or heavy was, as is known, first in the thirties and then during the war reexamined by Edgerton who extended Sievers' law to all sonants. An interesting addition was what Edgerton called 'the converse of Sievers' law': if in morpheme juncture the sequences *i-y* or *u-w* appeared, these, too, were subject to Sievers' law; thus, e.g., *su-varṇa* 'gold' ('of beautiful colour') obtained the variant *svarṇa-*, *antar-iyāt* the variant *antaryāt* etc. In initial position, allophonic variation between *dy-/diy-*, *sy-/siy-*, *dw-/duw-*, **kwōn/*kuwōn* 'dog', **g^{w}nā/*g^{w}ṇā* 'woman' takes place dependent on the final syllable of the preceding word (Edgerton 1934, 1943, 1962; cf. Lehmann 1952:10f.). Reexamining these aspects of Sievers' law, the Norwegian scholar Lindeman has found that the 'converse of Sievers' law, if right at all, is a rather late Indian, certainly not Indo-European, phenomenon. He also found that the initial variation was confined to monosyllables, whereas polysyllables had an invariable initial cluster, e.g. **swekuros* 'father-in-law', **swesōr* 'sister', **swādu-* 'sweet', **treyes* 'three', which have no alternants (e.g. **suwesōr* etc.) (Lindeman 1965b). For further references see Szemerényi 1970:103.

III. MORPHOLOGY

1.

In the field of morphology, too, our period has produced a large number of important studies but only a few major and original syntheses which shall be taken before the studies of details. They are either more or less complete surveys of the whole field (Hirt 1927b, 1928; Kuryłowicz 1964b, 1966; Savčenko 1968) or primarily of the morphology of the noun (Specht 1944).

Hirt's vision is focused on two factors of overriding importance: the determinatives and adaptation. The determinatives were deictic particles which did not modify the meaning of the word perceptibly; they were ā ī i u, k g t d p b, m n l r, s w, i.e. practically all IE phonemes (Hirt 1927b:82, 164). Adaptation, a concept that can be traced back to about 1870 (Ludwig 1867, 1871, 1873; cf. Delbrück 1904:129f.;

Oertel and Morris 1905:69f., 80 etc.; Jespersen 1922:384), means that elements of forms come to be used with a morphological function which they originally did not possess, e.g. *oxen* has in the synchronous system of today an irregular plural-suffix *-en* but in IE its antecedent was a stem-suffix, not a case suffix, cp. the IE nom.pl. **uks-on-es*. All flexion originates in a combination of these two factors: 'Wie beim Nomen, so sind auch beim Verbum Partikeln unbestimmter Art, höchstwahrscheinlich deiktischer Bedeutung an die Verbalformen angetreten, und durch Anpassung (= adaptation) kann eine solche Form zu einer Personalendung werden' (Hirt 1928:111).

Not very dissimilar are the views advanced by Specht (1944). According to him, too, practically all IE phonemes could function as demonstrative pronouns and be added to primitive roots and root-nouns to modify their spatial relations. These modifiers supplied the basis for the different IE noun-classes, i.e. *i-*, *u-*, *k-*, *t*-stems etc., but also for the case-forms. The latter, and with them the nominal flexion in general, started with a combination and opposition of two different stem-forms (heteroclisy) indicating the *casus rectus* and *casus obliquus*; from a contrast of two eventually the IE system with seven or eight cases evolved, always with the help of demonstrative pronouns. Verbal stems are originally identical with the nominal stems, except that personal endings are added; on their origin Specht is reticent.[58]

Kuryłowicz is less concerned with the evolution of the substance than with the transformations of the structure. His *Inflectional categories* (1964b) in particular is a systematic presentation of the history and primarily prehistory of the main elements of nominal and verbal inflexion.[59] Thus the optative is interpreted as an old past of the indicative, the subjunctive as a present indicative, etc. In the nominal inflexion, a tripartite case-system (I.Sing.Nom-Acc-Voc., II.Sing.Gen-Abl., III.Sing.Loc.) is reconstructed as the oldest stage (1964b:199).

None of these interpretations attempts to give a coherent picture of the successive stages of the development of the whole system. The first such attempt is by Savčenko (1968), which partly for that reason, partly on account of its not being readily accessible, deserves to be reviewed in greater detail. In the earliest period there were only two classes of verbal endings: the single set characterized by *m/s/t* in the sing. and *nt* in the 3rd plural (no forms for 1.–2. plur.) on the one hand, and the set *ha/tha/e/r* for the same persons on the other, the later active perfect and middle present set. Both sets were neutral as to time but the former expressed *action*, the latter *state*. This duality of the verb was matched by a similar opposition of active — passive in the noun, which later developed into animate — inanimate and by a further split of the animate class gave rise to the three-gender system of Indo-European.[60] The later neuters originally were sign-less, even the *o*-stems. The paradigm consisted of two

[58] See, however, 331[2] on the first person endings. — A more detailed account of Specht's views will be found in Pisani and Pokorny 1953:54f. ('Ein grossartiger Versuch, Bildung und Flexion der Nomina, dabei auch den Bau der Verbalwurzeln im Idg. auf ihre Anfänge zurückzuführen'), and in Polomé's review, 1950.

[59] The *Diogenes*-paper of 1966 is in essence a summary of the main ideas of 1964b.

[60] Savčenko (1968:23) rejects Lehmann's four-member system developed 1958:189.

forms (number was not differentiated): 1) ending in *-es*, 2) formed with *zero*; *-es* with the lengthened grade gave the nom.sg., otherwise the gen.sg. (also used adverbially as a dative or locative) and nom.plur. Thus *-es* expressed the *subjective*, *oblique* and *local*, while the *pure stem* corresponded to the absolute case of ergative systems: it was the subject with state-verbs but also the object.

In the second period the ergative construction disintegrates, as in the verb the opposition of action — state disappears. The verbal endings are split into *s/so*, *t/to* etc., the vocalic variants give rise to the middle. In the noun the dative is formed in the singular, and the plural obtains a nominative. In the pronouns the singular forms were *me* (*egho* is later) and *te*, in the plural there was only *wes* which expressed neither person nor number but a tribal collective;[61] when in the East the variant *mes* emerged, *wes/mes* meant 'we', **wes/wos* 'ye'.

The third period is ushered in by the departure of the later Asianic group which still has the two-class system (not three genders), has no aorist or perfect, has the archaic **te* 'thou' and laryngeals. Elsewhere the instrumental is formed, the personal pronouns obtain a second stem-form.

In the fourth period the Eastern (= satem + Greek) and Western groups are formed; the connections between Balto-Slav and Germanic are later. New Eastern creations are the *-sye*-future, the medial primary endings *ai/sai/tai/ntai*, the nominal instrumental and locative in *-bh-/-su* (in Balto-Slavic *-bh-*, still found in *tebē* etc., was in the noun replaced by *-m-*). The Latin 1.Sg.Perf. *-ī* from *-ai* must be from the East, e.g. Proto-Greek.

In the fifth period, Balto-Slav and Germanic draw closer and form a Northern group; *-bh-* is replaced by *-m-* and in the 1.Sg. pronoun *men* spreads to Germanic as an adjective. In the Eastern group the augment is introduced, a new imperfect is formed on the model of the aorist, and the perfect acquires the reduplication.[62]

2. *The Noun*

A. *Gender*

The thinking of our period has on this point been under the dominant influence of Meillet and, on some aspects, of Brugmann (1889, 1903:354–62, 1911:2/2.82–109). Meillet had long held that in IE no declensional class was specially earmarked for one particular gender; even the *o-* and *ā*-stems, often viewed as only containing masculine and feminine nouns respectively, were in fact 'promiscuous' and each of these classes contained nouns of both genders (Meillet 1908:116–18, already in 1897:141f.). At the beginning of our period Meillet developed the theory that the IE three-gender system replaced an earlier two-class system, in which only animate —

[61] Cf. Szemerényi 1964a:314f. on IE **swos* 'proprius' as originally meaning 'belonging to the **swe-*', **swe-* being the 'extended family'.

[62] Here Italic-Celtic (and Germanic) are obviously overlooked.

inanimate were distinguished. This system is still visible in that masculine and feminine are still often undifferentiated morphologically, cf. Lat. *pater* and *māter*. On the other hand, both these genders clearly contrast with the neuter which does not distinguish between the nominative and accusative.[63] From the same year, 1919, dates Meillet's discovery that IE had animate as well as inanimate expressions for many concepts, dependent on how something (e.g. fire or water etc.) was conceived of and visualized (Meillet 1919b:215f.). A final step was taken much later: in 1931, Meillet inferred from the Latin type *ferens* and many adjectives which do not distinguish the fem. from the masc. that the division of the animate class into two sex-based genders had not been completed in IE when the early colonizers, among them the forebears of the later Latins, departed from the IE community (Meillet 1931:5f.; cf. also 1933:19).

Meillet's thesis concerning the gender-indifference of *-o-* and *-ā*-stems received massive support from the Dutch scholar, Father Royen[64] who in 1929 produced a vast historico-critical treatise of over 1,000 pages on the numerous ramifications of the problem of nominal classes in the languages of the world. He objected, however, to the method of linear reduction and suggested that the IE three-class system developed from a more complex system (Royen 1928:168; cp. Schwyzer 1950:36).

Hirt's synthesis (1927b:321f.; cp. 1934:27f.) agrees in its essential elements with Meillet's system: he, too, believes that the evolution of the three genders was gradual, that no single class was assigned to any one gender, and that the different languages advanced to varying degrees on the road to full gender-development. But he also believes (1927b:329f.) that the differentiation of the feminine came from the demonstrative pronouns (*-ā* and *-ī*), though its origin there was obscure, it certainly had nothing to do (as Brugmann had suggested) with **g^{w}enā* 'woman' and **mā* 'mother'. Moreover, he thinks (334) that *ī* as an indicator of feminine gender preceded *ā*, and the latter, far from being contracted from *o* + *a*, was in no way connected with *-os/-om*.[65] Ribezzo also maintained the priority of *-ī* but in his view *-ā* was not even IE: it came from the Mediterranean area which possessed numerous nursery words in *-ă/-ă* and spread from such nouns to others and even to the pronouns. (Ribezzo 1929b).

Meillet's ideas were faithfully followed and developed by Schulze's pupil, J. Lohmann (1932:80f., esp. 84). Conversely, the Polish scholar J. Kuryłowicz, who was Meillet's student, at first adopted the views of Jacobi and Brugmann: under the

[63] Meillet 1919a:201f. The dichotomy had been established by B.I. Wheeler 1898:539f. See also Jespersen 1922:393f.

[64] Royen 1929 (but completed in 1925!):659f., 701f. Royen was on the whole rather critical of Meillet's views which he described as 'eine voreilige, unzureichend begründete Verallgemeinerung' (:218) and adduced examples to show that 'Meillet sich in dieser Genusstudie zu einer Oberflächlichkeit verleiten ließ, die wir von diesem hervorragenden Gelehrten nicht gewöhnt sind' (:224). — Cf. also the brief survey given by P.W. Schmidt 1926:334–57.

[65] That *-ā* was in no way connected with *-os* was also taught by Schwyzer (1939:457), while Specht (1944:310) considered *-ā* to be contracted from *o* + *a*.

influence of the former he viewed the opposition of the *o*/*ā*-classes as being originally confined to the expression of sex, but followed the latter in thinking that *-ā* as a sign of the feminine originated with certain nouns, and not, as Jacobi thought, with the pronouns; besides, he thought that *-ī* was more recent than *-ā* (Kuryłowicz 1935:244–251, esp. 250; cf. Jacobi 1897, esp. 115f.; Brugmann 1889, esp. 105). More recently, Kuryłowicz has tended to stress the formal aspects of the problem. The feminine formations in *-ī -ū* are regarded as derived from adjectives in *-i- -u-*; thus the well-known IE feminine type **wl̥k^{w}ī* 'female wolf' is linked up with the masc. **wl̥k^{w}os* via an adjective **wl̥k^{w}i-* (Kuryłowicz 1956:128f.; cf. 1964b:217f.). Abstracts owe their feminine gender to adjectives showing the gender-difference and not to extra-linguistic factors, and conversely feminines which are not sex-motivated are traced to abstract nouns (Kuryłowicz 1964b:214f.). The chief feminine indicator, *-ā-*, is explained as reflecting old, undifferentiated adjectives from heavy bases (*TRā* from *TRoh*), which by contrast to the subsequent *o*-type (*TR̥o* from *TR̥hó*) came to be restricted to the function of an abstract noun (Kuryłowicz 1964b:217). It is also suggested that the fem. *-ā* must have existed in pre-Hittite since Hittite possesses the ntr.pl. in *-a* which was identical (ibid.). Of interest is his warning — which coincides with Royen's thesis — that gender may be older than its historical exponents since old indicators may have been ousted by new ones, and his panchronic law that sex-differentiation in substantives develops into gender-differentiation in adjectives (Kuryłowicz 1964a:27,29).

Meillet's thesis about the lateness of the feminine was sharply attacked and rejected by Pedersen (1938:14f.). Exception is taken to it by Specht, too, though his own suggestion does not seem very different.[66] On the other hand, his doctrine about the gender-indifference of *o*/*ā*-stems has been taken up by Schwyzer who regards Greek νυός 'daughter-in law' and Lat. *fāgus* 'beech' as valid evidence (1950:32), and the same words are admitted for at least part of IE by Humbach (1951:16) who, however, points out that IE **bhāgos* might have been a masculine (Brugmann) and **snusos* might have been dissimilated from **snusūs* (Sommer). Schwyzer (o.c. 36) also thinks that the feminine *-ā* could not have come from the pronouns since **sā* is probably later than **sī* (*ibid.* 35). Bonfante reaffirms the old view that gender was primarily the product of animistic beliefs (Bonfante 1954; see also 1958; against this view is Scherer 1956), while Burrow (1955:201f.) upholds the formalistic view and maintains that at some period of later IE *-ah* and *-ih -uh* (i.e. *-ā -ī -ū*), came to be specialized as feminine suffixes. Hjelmslev's paper of 1956 gives a good survey of the various views concerning animate and inanimate, personal and non-personal.

In the late fifties three scholars made an attempt to give an overall solution of the problem, of whom only the two Europeans will be discussed (Martinet 1956b; Lehmann 1958; Fodor 1959, cf. also Fodor 1963). Martinet accepts Meillet's views for the general problem and merely wants to explain the origin of the feminine.

[66] Specht 1944:300f. Cf. also *ibid.* 307 on *-ī -nī* etc. growing out of a simple contrast.

He argues that the gender-distinction is useful when the noun is absent, and even more so with pronouns, esp. with demonstratives: who was it? he, or she. He thinks that the demonstrative was in fact the source of the feminine gender, esp. the nominative **sā*. This would seem to mean a rediscovery of Jacobi's (1897:120f.) and Wheeler's (1898:535, 541f.) ideas. But Martinet thinks that the pronouns in their turn received the ending *-ā* under the influence of such powerful feminine nouns as **g^{w}enā*. Once this point is reached, Martinet can proceed to outline the development by several — in fact, five — stages of grammaticalization which eventually lead to the Late-IE three-gender system.

The Hungarian scholar I. Fodor wishes to understand gender from within the linguistic system. He suggests that the establishment of motion was due to the analogical influence of the form of the noun on the modifier (1959:34): 'The sentence elements placed in close relation with the noun, first and foremost the parts of speech employed attributively, agreed with the termination of the noun in a rhyme-like assonance to show their belonging.' Thus there were such variations as *ekwos dhabros*, *g^{w}enā dhabrā*, *wergom dhabrom*, *sūnus dhabrus*, *mātēr dhabēr* for the nominative sing.; *ekwōd dhabrōd*, *g^{w}enās dhabrās* for the ablative sing., etc. By a process of weeding out only certain productive types of variability were retained, and eventually only *-ā* and *-ī* survived as feminine indicators (see also Manessy 1967:25; 394f.).

In 1960 formalism of a different kind triumphed. Gagnepain tried to show that the masculine-feminine dichotomy was triggered off by a twofold process: the nouns in *-ā* (originally 'abstracts', i.e. substantives, formed from adjectives) became adjectives and the adjective in *-o-* could become a substantive. The relation τόμος (noun): τομή (noun, from τομός adj.) is the basis of the wholesale redistribution of the IE lexicon. Conceptual factors are not admitted.[67] The contrast of unit, expressed by *o*-stems, and generalizations, expressed by *ā*-stems, is Mann's point of departure. The *ā*-stems are neuter plurals which become collectives and so singulars; polarization of the two categories led to the contrasts of active-passive, mobile-static, and finally to male-female (Mann 1962; similar contrasts had been established long before in Velten 1932:214). Brugmann's idea of **g^{w}enā* and similar nouns in *-ā* being the basis of the feminine suffix *-ā* is revived by Adrados (1963:71), too, who coins the term 'infection' for the process in question. This kind of possibility is exploited by A. García Calvo (1964) to explain why 'path, road' is feminine in Greek (and elsewhere). Such nouns are often connected with adverbs in *-ā* like ταύτᾱ πᾶ, *quā eā hāc rectā dextrā sinistrā* which are explained as owing their feminine *-ā* to ὁδός, *via* etc. He reverses this explanation: *-ā* is an old instrumental (prosecutive) and accounts for the feminine gender of ὁδός, *via* (also of χείρ, *manus*). Szemerényi (1964a:318f.) shows that 'daughter-in-law' was IE **snusūs*, not **snusos*, so that the main argument for feminine *o*-stems disappears. He also points out that

[67] For a detailed review and criticism see Szemerényi 1963:41–9.

the often quoted IE *$g^{w}en\bar{a}$ cannot be the source of the feminine *-ā*: the original form of the noun was *$g^{w}en$- and the enlarged *$g^{w}en$-*ā* presupposes the existence of the feminine *-ā* (Szemerényi 1964a:334, 1963:48). Moreover, the pronominal *$s\bar{a}$ and *$\bar{\imath}$, the feminines of *so and *is, reveal a common principle of formation: they represent *soh (or *seh) and *ih respectively, i.e. feminines formed with *h* from the corresponding masc. (or masc.-ntr., i.e. general) stems *so- and *i-; the laryngeal is thus seen to have been used as an indicator of sex, later of gender (Szemerényi 1963:48). It is also clear that the connexion between *-o-* and *-ā-* is not fortuitous or originally non-existent [68] but based on derivation: *-ā* is from *-o-h* (or *-e-h*) just as *-ī* and *-ū* are from *-i-h* and *-u-h*.[69]

At the end of our period we can record the publication of a new comprehensive treatment by G. Wienold. In addition to a historico-critical survey of past research the author attempts to find a correlation with the external world, in particular with religion (Wienold 1967). Cf. also Balázs 1966.

B. *Number and case system*

a) That the noun of Late Indo-European had *three numbers* has not and cannot be challenged. That the inflectional system had *eight cases* — like the Sanskrit system — was also generally acknowledged until fairly recently; if there were any doubts, they centred around the hypothesis that this state of affairs resulted from a reduction of an earlier more complex system.[70] But quite recently the existence in Late IE of the full complement of the eight-case system has also been called in question. Ambrosini (1960:85) has suggested that the locative was of post-IE origin, and Toporov (1961: 275f.) also maintains that the locative was not all-IE since it was never developed in the West, a doctrine which has recently been repudiated by Savčenko (1968:29f.). This trend is carried to extreme lengths when Makaev (1963:160, 296) seriously maintains that Primitive Germanic had four cases only (nom., acc., gen., dat.), all the others, e.g. the instrumental, being denied or declared to be limited local innovations (see in general Szemerényi 1968b:19f.). No more serious is the claim put forward earlier by Ivanov and Toporov (1958:15f.) that the locative was absent from the case-system of Baltic and Slavic, while the dative and instrumental, though absent from the system, existed as semi-adverbial forms. Assertions of this sort are no doubt influenced by the fact that such claims have been made concerning the corresponding plural forms. Thus Kuryłowicz (1935:167f.) was led to suggest that the so-called middle cases were merely adverbs and not case-forms in the proper sense of the term

[68] This doctrine was clearly stated by Hirt 1927b:334, and repeated by Schwyzer 1939:457.

[69] Georgiev 1965:86 revives the doctrine that *o-* and *ā*-stems can be masc. as well as feminine; 87 *$g^{w}en\bar{a}$ is via delabialized *$g^{(w)}n$- connected with *gen- 'beget'. Kastner thinks (1967:16f.) that the Hittite two-class system preserves the original state of affairs and that motion started with the pronouns. It should also be noted here that the new edition (1966) of W. Schulze's *Kleine Schriften* contains a new section on "Das Neutrum im Idg." (849f.).

[70] For an 8-case system see Hirt 1927b:37; Wackernagel and Debrunner 1930:8; Schwyzer 1939: 546. A richer system was assumed by, e.g., Thumb 1905:157.

in IE times, and this is almost identical with Meillet's (1937:299) formulation and not very different from Pedersen's (1938:30). The complex problems of the historical forms of the dat.-instr.-loc.plur. are well discussed by K.-H. Schmidt (1963a).

Against this trend of reduction stand two instances of differentiation, both advocated by Benveniste. The gen. and loc. dual, which are not distinguished in Skt. and OCS, are, mainly on the strength of Avestan, separated by him (1933:26[71]): for the gen. IE *-ōs* can be postulated, for the loc. *-ou*. Likewise, the gen. and abl. sing., which are generally represented by one form in the IE languages, are separated on the strength of Hittite evidence: the unitary form *-os* would show the collapse of originally distinct *-os* (gen.) and *-ots* (abl.) (Benveniste 1954b:32); the argument depends on the diachronic evaluation of Hitt. *z* = */ts/* and is not generally accepted (cf. Lazzeroni 1962:12f.; Ivanov 1965:35f.; see above, I 7.). Szemerényi suggests that the Mycenaean evidence now enables us to reconstruct the ending of the nom.-acc.-voc.fem. dual as *-oi*, not *-ai* (1966a:217; with references to Lohmann and Specht). Some progress can be recorded concerning the *o*-stem gen.sg. While it is still not possible to establish one ending for the entire IE territory, Bloch (1960:182f.) has shown that the Latin *-ī* has nothing to do with the Aryan formations in *-ī*, compared by Wackernagel,[72] and, on the other hand, Pisani has made it highly probable that *-ī* must somehow go back to *-osyo*, the ending long known from Greek, Armenian and Aryan, and now also attested on the soil of Italy by Faliscan *Kaisiosio* etc. (Pisani 1934a:295f.[73]).

b) As concerns the *origin* of the IE case-endings, it is clear that the *o*-stem abl.sing. in *-ōd* is contracted from *-o* + *ed*, and for *ed* the equation with OCS *otŭ* 'away from', first proposed by Kappus in 1903, seems cogent and has been adopted by Meillet (1921:50[74]), Hirt (1927b:170), Szemerényi (1955:68). Similarly the instr.-dat.-abl. plur., characterized by *-bh-* in the Southern languages, is rightly connected with the preposition *by* of English, *bei* of German. On the other hand, the animate nominative-ending *-s* has long been identified with the demonstrative **so* and this view has now been corroborated by Specht (1944:354f.) and Biese (1950:5f., 9, 13; cf. also Kuryłowicz 1964b:211).

Going by such clear cases it is tempting to infer that the case-endings generally developed from postpositions, pronouns or particles,[75] as has been maintained by Willman-Grabowska (1938:290f.), Tovar (1941), and more recently by Scherer (1957:582). It is difficult to understand how Deeters could assert that the case-endings of IE do not derive from 'postpositions'[76]. A different point of view is repre-

[71] Ignored by Kuryłowicz 1964b:200; cf. also Risch 1966:56–8.

[72] The old doctrine is reiterated by Gil 1968:25f.

[73] And since then repeatedly, e.g. 1956:315–24, 1962:82. The critics are of course right in saying that a *luposyo* could not, via *lupoyyo*, give *lupeyye* and even less could this yield *lupiyye*. But the alternative is not simple rejection, see Szemerényi 1970:172.

[74] Hesitates between *otŭ* and Lat. *dē*, only the latter is mentioned in 1937:322.

[75] Rich information on earlier literature is to be found in Wackernagel and Debrunner 1930:12.

[76] Deeters' paper (1938) is inaccessible to me, I quote from Pisani and Pokorny 1953:62.

sented by Specht who thinks that the case endings, like the stem-formatives, derive from old pronominal stems (see Specht 1944:353f.). The Finnish scholar V. Tauli (1956) also assumes that the primary flexional suffixes originally were derivational suffixes which originated partly in agglutination, partly in secretion; some of these suffixes may well be from former pronominal stems but certainly not the whole nominal inflexion as suggested by Hirt or Trombetti. The Spanish comparatist J. Gil, on the other hand, rejects the view that the case-endings are deictic elements (Specht) and thinks that they were suffixes or enlargements which had no definite morphological value (Gil 1968: 39f.; cf. Adrados' 'infection' reported above).

In several instances one morph characterizes more than one case, and so the question arises whether the different case-forms can be traced to a common source. Thus the gen.pl. ending *-om* coincides with that of the ntr.sing.nom.-acc. or the masc.acc.sing. of the thematic stems, and in all probability represents a derived adjective;[77] thus IE **rēgom genos* could best be rendered by Lat. *genus rēgium* which can be equated semantically with *genus rēgum*. Rather similar is the view, first voiced by van Wijk in 1902, that, apart from the difference in accent, the gen.sg., ending in *-os*, originally was the same form as the nom.sg., e.g. **pēs* 'foot' from **pédos* was the same as gen. **pedós*. This view has been accepted by Hirt (1927b:46f.), Kuryłowicz (1935:163f.[78]), Specht (1944:361f.), Ammann (1961:56f.; see also Lehmann 1958: 192f.), but rejected by Jespersen (1922:383) and Velten (1932:218), and those who trace the nom.sing. ending *-s* to the demonstrative *so* certainly cannot accept equation of the nom. sing. with the gen.sing., at least not in the form that gen. **pedós* is diachronically identical with nom. **pēs*. But it would still be possible to regard **pedós* as functionally identical with gen.pl. **pedóm*: both would be nom.sing. forms but of the derived adjective **ped-o-*, differentiated according to gender, and later distributed between the two numbers.

This kind of treatment of the origin of case-endings of necessity leads to a *reductionist interpretation*. As we have seen, the instrumental characterized by *-bhi* can be regarded as fused from the noun and a postposition, and therefore non-existent before this fusion; the gen.pl. can be interpreted as a nom. or acc. of an adjective, and the gen.sg. can be explained either in the same way or as an original ablative, in either case the net effect is that the gen. is eliminated from an earlier stage.

It is therefore as well to be reminded by Winter (1967) that, as can be seen in the history of the Tocharian dialects, a case can be replaced by a quasi-case, a phrase — which then coalesces into a proper case — without there being any break in the system; this obviously means that we can establish that an instrumental form with *noun + bhi* came into use in Late-IE but we cannot infer therefrom that there was no instrumental form prior to the appearance of the *-bhi*-form. And if the reductionist thinks that he

[77] For this interpretation see Pedersen 1925:159; Martinet 1953c:258[23]. On Hittite *-an* in this function see now Laroche 1966:33–41.

[78] In his recent work Kuryłowicz seems to have given up this view and to trace the genitive to an original ablative, see, e.g., 1964b:202.

can find a close parallel in the Early Semitic three-case system he should not overlook that the current reappraisal of the Semitic system rather suggests that the familiar three-case system was simplified from a more complex system in which, in addition to nom. — acc. — gen., there also was a dative, a locative, and an adverbal (see von Soden 1961:39f.).

On the other hand, the reductionist view has within certain limits a high degree of probability and in such cases one might find a useful model for the phylogenetic evolution in the ontogenetic development of child-language. The fine study by Velta Rūķe-Draviņa (1959) of the morphological development of a Latvian-speaking child is of importance for the diachronist, too, and, although it needs to be corroborated by further studies in other languages, its findings are sufficiently clear to merit a brief summary.[79] The beginnings of morphology appeared at one year and seven months (1.7): the nom. and acc. were differentiated between 1.7–1.9; the loc. appeared at 1.8–1.10, the gen. at 1.11, the dat. at 2.0, instr. at 2.4. The plural made its appearance with the nom. at 1.11, but acc. dat. loc. and gen. came between 2.0 and 3.1. Verbal inflexion started after the nominal. Tense appeared first (before the personal endings): the present was separated from the future at 1.10 (when the past was still expressed by the pres.!), the first past forms appeared at 1.11 (first in *būt* 'be, have'). Of the personal endings the 3rd persons came first, followed by the 1st persons at 1.11 (2nd pers. still expressed by 3rd!); the 2nd sg. came at 2.1, the 2nd pl. at 2.7!

c) It would be of obvious interest to examine in the light of this ontogenetic chronology the scheme submitted by Kuryłowicz (above III 1). But in our period, as before, it is the distinction of nom. and acc. that has proved of absorbing interest and served as the basis for far reaching speculations about the sentence structure of primitive IE.

As is known, Uhlenbeck was the first to advance the theory in 1898 (also 1901: 170f.) that the IE opposition of nom. and acc. overlaid an earlier opposition of *activus* and *passivus*, later also named *transitivus-intransitivus*, or *casus energeticus–casus inertiae*.[80] The case characterized with *-m* was the old passivus, while *-s* indicated the activus. The latter expressed the agent of a transitive verb, the former the 'agent' (or rather 'patient') of an intransitive verb and the object of a transitive verb. These ideas were in our period first taken up by Muller (1924:16f.) and Lommel (1923:171f.) but rejected by Hirt (1927b:39). A significant nuance was added to this picture by Pedersen in 1933: the difference between the asigmatic, lengthened-grade nominative (type Greek πατήρ) and the sigmatic nominative reflects an earlier opposition between a true *nominativus* and Uhlenbeck's *transitivus*, an oblique case expressing the agent of a transitive verb, while the subject of an intransitive verb and the object in general are expressed by the *stem-case*, Uhlenbeck's passivus. The opposition of asigmatic –sigmatic was also correlated to the opposition of *h*- and *m*-conjugation, i.e. in-

[79] For the general problem see now E. Alarcos Llorach 1968.

[80] For a detailed survey of Uhlenbeck's work and for the general problem see Royen 1929:865f.; cf. also Schwyzer 1950:70.

transitive–transitive (Pedersen 1938:83f.). Much the same view was independently advanced by Kuryłowicz in 1935 (pp. 162f.) who also distinguished two types of the activus. Both scholars maintained that the *s-casus* is identical with the gen.-abl. in *-s* (van Wijk). The same conclusions were reached in 1936 by Vaillant: the IE nom.sg. in *-s* was an old ergative,[81] identical with the abl. (and gen.). But he went a step further and explained on this basis the *mi*-conjugation as a pseudo-transitive formation: **g^{w}hen-mi, *g^{w}hen-si, *g^{w}hen-ti* etc. 'I strike, thou strikest, he strikes' derive from a phrase with the noun of action **g^{w}hen-t-* 'strike' and the pronominal ergatives *mi ti si* etc., so that their meaning was '(there is) a strike by me, thee, him etc.'.[82]

Since the last war the ergative theory[83] has won the adherence of A. Martinet. But it deserves to be stressed that Martinet has recognized that the IE (animate) nominative did not show two distinct types of formation: at a certain stage *-s* was the universal ending which was lost after 'continuants' (i.e. nasals, liquids, *s* and *h*!) (Martinet 1956c:13f., 1962:150f.). Szemerényi also found that the sigmatic and asigmatic types were not independent formations: the asigmatic type showed lengthening because the stem-final consonant assimilated the formative *-s*.[84] There was no primordial division between nominatives with and without *s* as is suggested by Kuryłowicz (1964b:208f.) (who nevertheless seems to have abandoned his old views) or Minissi (1964–65:103) who thinks that the sigmatic nom. expressed the definite, the asigmatic the indefinite subject, and that these relations were paralleled in the accusative by *-m* and *-ø*.[85]

d) The problems of *heteroclisy* (in general, see Schwyzer 1939:517f.; Kronasser 1962–66:278f.; Forster 1967:133f.) were made the subject of a monograph by H. Petersson in 1921.[86] He found that these neuters which, as seen by Meringer and Pedersen, had *i, u, ā, t, d, g, r, l, s* in the nom.-acc. and a nasal in the oblique stem, were originally characterized by *o*-vocalism in the nom.-acc., *e*-vocalism or nil-grade in the other cases. Thus 'water' was in IE: nom. **wod-ōr* and **wod-ā*, gen. **wed-n-és* or **ud-n-és*. The oblique nasal is very often carried by anticipation into the root-syllable: **wednés, *udnes*, and analogical **wodnes* developed into **wendnés, *undnes, *wondnes* and then even produced nom. **und-ā* (Lat. *unda*) or **wondōr* (Lithu. *vanduo*). Further, a stop was aspirated in a stressed syllable: **óst/*ostnés* gave **ósth/*ostnés*; this also accounts for the variants of the 1st sing. pronoun: **ég* became **egh*. Hirt was primarily interested in the oblique *n*-stem, for which he

[81] Bonfante 1935b rejects the notion of sexualizing *s* and seeks to explain the nominatival *s* as part of the stem.

[82] Rather different is the opposition of passive *r*-stems and active *n*-stems construed by Pisani 1951 on the strength of rather questionable pairs such as Lat. *uxōr*: IE **uksōn* 'bull, ox'.

[83] On the general problem of the ergative construction see Martinet 1965b (first 1958):206–22; Lyons 1968:354f.; and from a generative point of view, Anderson 1968:27.

[84] Discovered 1956, first published 1962a:13. See also above II 2. C.

[85] For the accusative Minissi refers to Jacobi, *Compositum und Nebensatz*:114, but there it is clearly stated that there is no evidence for *-m/-ø* in the acc. Though not found in IE, the distinction exists in many Uralic languages, s. Wickman 1955:146.

[86] The study of 1922 deals with further cases, mainly Armenian.

suggested coalescence from the root and the adverb *en* 'in' used as a postposition in the locative: **ud-en* 'in the water' then led to the creation of the gen. **ud-(e)n-os* etc. (Hirt 1927b:48f. = 1913, developing an idea suggested by Bartholomae 1889:29).

In the meantime the decipherment of the Hittite documents had revealed that the heteroclites, only vestigially apparent in the other languages, were very much alive and productive in Hittite. They were taken into account by Benveniste who interpreted the heteroclitic inflexion as an attempt to combine in one paradigm various derivatives which originally had nothing to do with each other (Benveniste 1935:2f., and for the interpretation 184f.; see also Bonfante 1935a), a view which in a simplified form, i.e. reduced to the opposition of casus rectus and casus obliquus, was advocated by Specht also 1944:337f., and passim. Pisani, as we have seen (fn. 82), found this kind of opposition in *r/n* stems like Lat. *uxōr*: IE **uksōn*. Szemerényi (1956a:524) interpreted **wedōr*/loc. *uden* as representing in the nom.-acc. a tautological compound **wed* 'water' + **ōr* 'river, water' (from **er-* 'go, run, flow'), while for **uden* he accepted Hirt's analysis; from a small nucleus of such compounds developed the heteroclitic type so productive in Late IE. From Lat. *iecur/iocineris* Rix (1965:79f.) infers — with a curious inversion of Petersson's results — that in the loc. sing. the root had *o*-vocalism so that for 'water' we find **wedōr*/gen. **udnés*/loc. **wodén*, for 'liver' **yekʷr̥t*/ gen. **ikʷnés*/loc. **yokʷén*; these results are accepted and applied to **swepōr*/**supnes*/ **swopen* 'sleep' by Schindler (1966:67f.; see also Kuryłowicz 1964b:105f.; and for survivals in Tokharian, van Windekens 1960a; in Slavic and Baltic, Eckert 1963).

e) Problems of *derivation and composition* have been treated by Hirt (1927b:183f., 1928:1f.) and Meillet (1937:252f., 287f.) on an IE basis but for a detailed survey we still have to rely on Brugmann's *Grundriß*. More than in any other department of comparative linguistics, word formation research is codified in the grammars of the various IE languages. Indispensable are Leumann (1926–28) for Latin; Chantraine (1933), Risch (1937) and Schwyzer (1939) for Greek; Wackernagel and Debrunner (1954) for Indian; Kronasser (1962–66) for Hittite; and Duchesne-Guillemin (1936) for Iranian (compounds).

Of monographs dealing with particular formatives we may mention Frisk's (1934:1–49) study in the suffix *-ro-* in Indian and Greek. The replacement of this suffix by *-i-* in the composition, known as Caland's law, has been studied by Szemerényi (1964a:395f.) who explains the curious exchange on the assumption that original formations in *-i-*, which survive in some compounds, were replaced as simplex forms by enlargements with *-ro-* and in the latter *-i-ro-* became by syncope *-ro-* (cf. Kuryłowicz 1964b:232. For further Greek material see Chantraine 1967). Particular attention has been paid in our period to the dental suffixes *-t-*, *-ti-*, *-tu-*, *-to-*, *-ter-/-tor-*. Developing certain observations made by Schulze and Wackernagel, Meillet (1925a) advanced the suggestion that *-ti-* as a formant of nouns of action was originally used in compounds only. But, as was pointed out by Gershevitch (1938:175 n.), and subsequently by Benveniste (1948:109f.), there are far too many simplex nouns formed with *-ti-* for this thesis to be acceptable (see also Szemerényi 1964a:387 for further

references.). Benveniste's book is in essence a masterly study of the suffixes *-ter-/-tor-* and *-ti-/-tu-*, with emphasis on a subtle notional definition of their functions (for further details, see Szemerényi 1950:187–90. Cf. also Risch 1954:215–20, and for the formations, Holt 1941:21–27, Šur 1963.). For a comprehensive classification of the whole system of suffixation a model has been worked out by Leumann for Latin which should easily be adaptable to other IE languages (Leumann 1944; see also Šur's classificatory system, 1963).

As concerns nominal composition,[87] we must first record that in a brief but important paper, E. Hoenigswald (1937) presents a relative chronology of the various compositional types. (Cf. also Puhvel's important survey, 1953, which gives the same general picture.) Bahuvrihis and synthetics like σύξυξ κουροτρόφος form the oldest layer while determinatives (types μητροπάτωρ ἀκρόπολις συνέριθος ἄιδρις ὑποπόλιος) are innovations, foreign to ancient IE.[88] The old device was 'mutation', 'principio essenziale della composizione nominale antico-ie' (:270); even derivation, which also changes the meaning, was not different from mutation, but the trend was towards the tatpuruṣa-type.

The bahuvrihi type, with its change of word-class, calls for some explanation. Very old is the view which sees an elliptic (relative) clause in it, a view represented by Hirt (1928:39), Schwyzer (1939:454), Biese (1950:6f.). Only slightly different is Humbach's view (1954) that the type originated in parentheses,[89] and the same seems to be maintained by Gonda (1967). The transformational link between bahuvrihi and contrastive syntagmas is brought out by Seiler (1960:41f.). Marchand (1967:24f.) finds that bahuvrihis are not exocentric — that would be a contradiction in terms — and not even compounds, they are simply derivations.

An odd feud, reminiscent of the Battle of the Books, between two German professors led nevertheless to a number of penetrating studies in Greek and IE composition (Sommer 1934; 1948). The long neglected hypostatic compounds have now been taken up by the Finnish scholar Eino Mikkola (1962). The iterative compounds — with their Sanskrit name āmrēḍitas — have recently been studied by Masson (1966) and Dressler (1968a).

3. *The Adjective*

The adjective, in particular the phenomenon of *gradation*, has often been discussed in recent years. The two parallel systems: 1) *-yes-/-isto-* and 2) *-(t)ero-/-(t)mo-* have been given a novel interpretation by Benveniste (1948:115f., see also 1935:84f.).

[87] For the classification of compounds see Schwyzer 1939:425f., 452f.; for the principles of division Pollak 1912:62–4 (adopted by Salus 1966:61f.); Marchand 1967. A generative solution is offered by Staal 1966.

[88] This point concerning the determinatives was subsequently elaborated by Risch 1944–49.

[89] But the suggestion that εὐρύοπα (Ζεύς) was 'weit die Augen' ignores the fact that the noun would have to be in the dual, and is semantically also unsatisfactory since the meaning must be 'far-seeing' (unless it is 'far-sounding'!).

The comparative suffix *-yes-* is said to denote 'une qualité intrinsèque' and to construe with a case that was originally meant as an equative; Lat. *melle dulcius* was not 'sweeter than honey' but 'as sweet as honey'. The suffix *-(t)ero-*, on the other hand, mostly found with adjectives expressing notions of time and space, and contrasting with a positive (Greek δεξιός : ἀριστερός 'right:left'), not, as previously thought, with another form in *-(t)ero-*, had a 'valeur différentielle', and construed with a particle. The superlative in *-isto-* is found to be connected with the ordinals in *-to-* and ultimately with the suffix of verbal adjectives.

Earlier it had been taught that *-yes-* formed verbal adjectives expressing intensity (Ved. *tarīyas-* 'easily penetrating'), and *-tero-*, as we have just seen, formed pairs of contrast (see, e.g. Schwyzer 1950:183f.); Specht (1944:301f., 305) assumed that even *-yes-* expressed contrast. Benveniste's views were adopted by Ghiselli[90] while Nils Berg (1958) introduced some modifications. Friš (1953:107f.) argued that *-yes-* was originally a noun used predicatively (e.g. 'this is a beauty'), which then could either be inflected and supply the comparative *-yes-* or be enlarged with the suffix *-t(h)o-* (cf. Lat. *iūs-tus*) and supply the superlative.[91]

The problems of gradation have repeatedly occupied Kuryłowicz. In 1935 he suggested that *-yes-* was a nominal formation, *-is-tho-* an adjective thematized from an abstract in *-tā*, i.e. *-tho-* represented *-tH_2-o-*. Almost thirty years later his views have become more explicit. The form in *-yes-* is not a comparative ('bigger') but something like 'the big one' — although Kuryłowicz admits that the form was a deverbative noun; in fact, a formal examination convinces him that this type of noun survives in Aryan neuters in *-iš-*. The superlative in *-isto-* is now said to be differentiated from the single intensive form in *-yes-*, though no details are given. The difference between *-tero-/-ero-* and *-tṃo-/-ṃo-* is said to be based on a hiatus-filling *t* which originally appeared after sonants only, like the nominal suffix in Skt. *kṛ-t-* etc. The connection between ordinals and superlatives is also emphasized (Kuryłowicz 1935:49, 1964b:227–39. See also 1956:70, 1954).

A quite different and hardly probable line is adopted by Gāters (1954)[92]. Accepting the view that the comparative in Finno-Ugric and partly also in Turkic and Samoyed is in fact a diminutive, he finds indications that the same happened in IE: *-yes-* is diminutive in Albanian and appears in Greek -ίσ-κος, *-isto-* is diminutive in Old Prussian *eristian* 'lamb'. It is perhaps here that one should recall that Hirt (1927b: 195f.) had suggested that the superlative *-istho-* represented *-i-stho-* (from **sthā-* 'stand') so that, e.g., IE **bheristhos* (Hom. φέριστος) meant 'im Tragen (fest) stehend'.

The long-standing view that beside the basic form *-yes-* there was already in IE times the enlarged *-is-on-* preserved in Greek *-ιον-* and Germanic *-izan-* has recently

[90] Ghiselli's original paper of 1950 (see Bonfante, *Word* 9, 1953:75f.) is inaccessible to me, but it is now available as Ghiselli 1961, pp. 23–67.

[91] Burrow (1955:160f.) holds the same views, and Ghiselli (see fn. 90) p. 24 also regards *-yes-* as a noun. For further possibilities see Erhart 1956b.

[92] He also adduces *-ṃt-* as the basis of Greek -(τ)ατος (p. 55), a formation which is regarded as an elative by Aitzetmüller 1960:77.

been reaffirmed by Ruijgh (1967a:90; see also 1967b:11) but rejected on the evidence of Mycenaean Greek by Szemerényi (1968a).[93]

4. *The Numerals*

The numerals continued to exercise the patience and ingenuity of scholars. The data as marshalled by Hirt (1927b:306f.) or Meillet (1937[94]:409f.) present a baffling disarray, esp. in the formation of the decads and ordinals.[95]

The fact that Greek ἑβδομήκοντα '70' seems to be formed from the ordinal 'seventh' while ἑξήκοντα '60' is from 'six' had in the last century led J. Schmidt to suggest that after 60 there was a break just as there was after 12 (cf. twelve–thirteen), and that these anomalies were due to the influence of a sexagesimal system, i.e. of Babylon. This thesis was upheld in our period[96] by Hirt (1927a:93), and Jacobsohn (1927, esp. 86, 99). But the mainstay of this hypothesis, the alleged formation in Greek of 70–90 and in Latin of (70? and) 90 from the ordinal, has been repeatedly shown to be untenable: by Mahlow in 1926 (p. 309), by Pisani in 1932, by Sommer in 1951; all have shown that these decads contain the digits, as expected, and not the ordinals. It is to be hoped that the old doctrine is really finished off now.

But the decads present several additional oddities. The same numbers seem to be expressed by a neuter plural in one area, by a singular compound abstract in another, by simple abstracts in a third, etc. In 1960, Szemerényi thought that the time had come to show that these various formations were merely alterations of an inherited set, built up on the principle that a decad consists of the digit plus the word 'ten' in the form **(d)komt*.

Just as confused is the picture presented by the ordinals, especially between 3rd and 10th. They seem to be formed from the corresponding digits with *-tiyo-* or *-to-* or *-o-*. Here again Szemerényi (1960: p. 67f.) was the first to show that the primordial formative was *-o-* which in certain ordinals attached to itself a preceding consonant (e.g. *-y-* or *-t-*) and acquired the shape *-yo-* and *-to-*, even the blended *-tiyo-*; he also shows how the numerals influenced one another in the several languages, and already in Indo-European. On ordinals see also Gonda 1950, and, without taking note of either, Kuryłowicz 1964b: 236f.

As to individual numerals, we may mention that for 'two' a form **de-we* from the demonstrative *de* and the personal pronoun *we* has been posited by Jensen (1952:52f.; see already Blankenstein 1907:110), who even thought that simple *de* might be attested by Hittite *dān* 'second', *dāyuga-* 'two years old'; this was later assumed by

[93] I have not seen the paper of Poldauf at *Časopis pro moderni filologii* 31, 1947:109-22, which, going by the report at *BSL* 44/2, 1948:157–8, seems interesting.

[94] But of course much earlier formulated for the first time.

[95] On certain fundamental problems see Nehring 1929.

[96] A late-comer is Rosenfeld 1957:182.

Benveniste, too 1962:85f. An element *-w-*, or a laryngealist *-H^w-*, has repeatedly been assumed for the even numbers,[97] although no clear principle is perceptible. The element *de* 'two', just mentioned, has also been suspected in **dekṃt/*dkomt* 'ten', if formed from a **komt-* 'hand' (for references see Szemerényi 1960:69 n. 5). Quite certain is, on the other hand, that **kṃtom* '100' is formed from **dekṃt* '10' — the only question is how? Since all decads are built from digit + **(d)komt*, it was suggested by Szemerényi (1960:140) that we should indeed start from **(d)km̄komt* which could develop into **kṃkom* and by dissimilation to **kṃtom*. Risch (1962:135f.) suggested regarding **kṃtom* as an ordinal but that could only give 'the tenth' (decad?), not 'ten decads'; see now Szemerényi 1970:208.

5. *The Verb*

The verb has also favoured the reductionist trend in our period. That the Late IE verb had two voices, four moods — indicative, subjunctive, optative, imperative — and in the indicative at least the present, aorist, and perfect tenses, seems beyond reasonable doubt. But, as was stated by Schwyzer (1939:645), the tense-system can be reduced to a *primitivum*: this follows from the fact that present and past (= aorist + imperfect) have endings which are differentiated by an accessory *i* only (*mi/m*, *si/s*, *ti/t* etc.). But Kuryłowicz (1932) and Stang (1932) also observed that the endings of the perfect and the middle show a basic affinity (compare Vaillant 1946; Kuryłowicz 1956:41f., 1964b:58–70, 150): this means that the perfect is not an additional tense as assumed by Schwyzer (l.c.) but an additional voice. The method inescapably leads to a reduced system, in which there were two voices: active and middle-passive, denoting action and state respectively (see especially Safarewicz 1964, but also the Soviet scholars Savčenko 1955:117; Ivanov 1965:137), but only one tense-form, i.e. time was not indicated (on the verb at any rate). All this presupposes of course that the development was linear which may, or may not, be the case. One of the staunchest representatives of the reductionist school is Adrados (1963, 873 pages!) who in many points revives Ludwig's old adaptation theory (for an appraisal see Cardona 1965:105–114).

a) To turn to specific problems of the Late IE verb. Various present formations have received detailed, sometimes monographic treatment. The general problem of the cleavage between thematic and athematic formations has lately been treated by Kuryłowicz (1964b:116f., 1968:271f.), Adrados (1963:601f.), Risch (1965), Schmitt-Brandt (1967b:128f.). The further question how far *o*-vocalism is found in these formations, a question previously treated by Meillet (1937:203, and earlier: 1915: 181f., 1918:103f.), has now been reexamined by Hiersche (1963; but note Szemerényi 1966b:45f.). The reduplicated presents were ascribed an 'aspect déterminé' by Vendryes (1916:117f.) while Kronasser (1962–66:571f.) has attributed to them a

[97] Cuny 1924; Benveniste as reported by Minard, *BSL* 44/2, 1948:54; and most recently Erhart 1965, esp. 20f. For **sweks* '6' from **weks*, see Szemerényi 1960:78.

causative meaning and N. van Brock (1964:147f.) has returned to the time-honoured iterative function. The formally well-defined *sk*-type shows varied semantic developments in the several IE languages. As original meaning Meillet (1937:204, 221) assumed an 'aspect déterminé', Porzig (1927) a 'ruck- oder aktweise vor sich gehende Iteration'; for Couvreur (1938) the suffix had a 'causative-intensive' meaning, while more recently an 'iterative-durative' (Kuryłowicz 1964b:106f.) function is again assumed.[98] But the favorite of our period has been the so-called nasal infix type. As to the form of the infix, the ablauting *ne/n*, assumed by de Saussure, is maintained by Specht (1932:82), but simple *n* is postulated by Hirt (1928:204, but already in 1900: 138f.), Benveniste (1935:159f.), Kuiper (1937:43, esp. n. 2, 89), Strunk (1967:26). The further problem which results from the fact that infixation runs counter to the universal principle of IE word formation, namely suffixation,[99] is either ignored or solved in accordance with this principle (Hirt 1928:204; Benveniste 1935:160; Kuiper 1937:40f.; Schwyzer 1939:691f.; Kuryłowicz 1964b:106), i.e. by the assumption that the nasal was suffixal at an earlier stage: thus **yuneg-* was formed with *-(e)g-* from a base **yun(e)-* which in its turn had been formed from **yeu-/*yu-* with a suffixed nasal. Meillet (1925b:275f.) thought that the long vowel following on the nasal could only be *ā* but Strunk (1967:56f.[100]) has shown that the nasal infix can appear in roots terminating with *ē* or *ō* also.[101] As to the function of the nasal infix, Vendryes (1923:265f.) confirmed Delbrück's old view that it indicated a terminative aspect, whether it be the beginning or the end of an action, though he insisted on the 'momentary' element. (Cf. also Meillet and Vendryes 1953 (but not changed since 1924):184 and Sjoestedt 1926:60f., 178.) Kuiper (1937:204f., 214f.) also adhered to Delbrück's 'terminative aspect', although he clearly saw the functional diversity of the formation in the different IE languages, amongst others the transitive-causative function in many languages. This aspect is regarded as the original by Kronasser (1960), a view which had been advanced by Sturtevant before and rejected at the time by Kuiper. (On Sturtevant see Kuiper 1937:15. Cf. also Jelizarenkova 1961:103f.)

The phenomenon that a verbal root often forms more than one present stem, has been investigated with reference to Old Indian by the Hungarian scholar J. Vekerdi; his result is that the variant formations are almost all innovations and the IE verb did not have this property (1961). This is at variance with Kuryłowicz's doctrine, according to which the various present-formations served the purpose of renewing the old system which must have meant coexistence for a while (1964b:105f.).

That the *asigmatic* type of *aorist* was originally nothing else but the past (known as the imperfect) of certain present stems has long been clearly understood; its separation from the present was accomplished when the old present stem was ousted by a new

[98] Also Machek 1958:46f. (intensive-iterative); A.G. Ramat 1968; Dressler 1968b:159f.

[99] Kronasser is quite isolated with his assumption of a true infix (see 1960:22, 1962–66:433[1]) as is Vaillant who derives the nasal by anticipation from a suffixed nasal, 1946:75f.

[100] Where also the references to Wackernagel and Leumann.

[101] Lindeman 1968:83–90, argues that Germanic did not have *nē*-verbs.

formation. The *sigmatic aorist*, although later (Meillet 1908:79f.; cf. Schwyzer 1939:749 n.2; Kuryłowicz 1964b:109) — but not post-IE as suggested by Otkupščikov (1967:49) — certainly followed the same development: it is the past of a lost (athematic) *-s*-present (Schwyzer 1939:749,2; Kuryłowicz 1956:33, 1964b:104 n.7, 110; Ivanov 1965:173f.). Kretschmer's suggestion that the *s*-aorist is a kind of objective conjugation, and *-s-* itself a pronoun, is hardly a promising line (1947:11f.; accepted by Kronasser 1960:21).

The *perfect* — whose existence in Late IE is, whatever might be surmised about Proto-IE, guaranteed by the evidence of languages as widely distant as Indian on the one hand and Germanic and Celtic on the other — stands both in form and in meaning apart from the other verbal forms. As to form — the characteristic *o*-ablaut and the peculiar personal endings, especially the 3. sing. in *-e* (**woide* 'knows'), have revived Brugmann's view that the perfect is a nominal form (an agent noun or a noun of action): after Hirt (1928:270f.) this view was particularly enthusiastically maintained by Grünenthal (1936[102]), later even by Belardi (1950:102), in spite of the terminological reservations, and now also by Kuryłowicz (1964b:62) who assumes a verbal adjective in *-e* (= 3. sing.) which was amalgamated with subject-indicators. A long-standing formal problem is the difference in quantity between Vedic 1.sg. *čakara* and 3.sg. *čakāra* 'I/he made'. After the failure of Brugmann's law to account for the phenomena on its own, a combination with the laryngeals seemed more promising: in 1927 Kuryłowicz (1927b:103) suggested that, in contrast to IE **k^{w}e-k^{w}o-re* which regularly gave *čakāra*, the 1.sg. **k^{w}e-k^{w}or-He*, in which the root was also a close syllable, just as regularly gave *čakăra*. This view was still upheld by Kuiper in 1957 (p. 90) and later (1959:437), and by Mayrhofer in 1965 (p. 90),[103] although it had been given up by its author in 1948 and replaced by a structuralist explanation which still does not seem the last word on the subject (Kuryłowicz 1948:53–54, 1949:57–60 — but cf. Pisani and Pokorny 1953:48 — Kuryłowicz 1956:337). It is therefore in order to recall that Hirt (1928:275) favoured Schmidt's solution (*a* and *ā* represent the vowels legitimate with IE *e/o* and *a*-verbs respectively), while Belardi (1950:114f.) thought that Hittite provided new arguments for Saussure's view that the Indian difference rested on an IE difference between 1.sg. *-e-* and 3.sg. *-o-* in the root-syllable.

The perfect reduplication has been treated by Pisani (1926) in general, by Benveniste (1965) with reference to certain Indo-Iranian peculiarities. Leumann (1956:241) has pointed out that the absence of reduplication is established in one case only (**woida* 'I know') and Szemerényi (1967a:25f.) has suggested that even there it is due to secondary development.

Just as difficult is the meaning of the perfect. The traditional definition ('present state resulting from a past action') obviously does not account for perfects which mean 'to shout' or 'hit' and Hirt (1928:278f., esp. 281, 1934:220) repeatedly argued for an intensive meaning (**woida* 'I know' is really 'I see, I see') which 'easily passed into a

[102] Against Lohmann, *KZ* 64, 1937:42–61, see *ibid.*:271.
[103] And for the law also *Sprache* 10, 1965:178.

past'. Particularly important is Grünenthal's 1936 paper: as he shows, a present have-construction has often changed to a past tense, an idea which has since repeatedly been developed by Kuryłowicz (1956:29, 1964b:55,57,61f.), and after him by K.-H. Schmidt (1964). The formal problems of the perfect have recently been treated by Neu (1968a,b), the semantic problems by Perel'muter (1967), both by van Brock (1964:149f.) who suggests that formal properties matched the meaning: the perfect of state had no reduplication, while the reduplicated perfect was transitive and resultative.

The existence in IE of an imperfect is a moot question. From this point of view Strunk's work has additional interest: the fact that *-neu-* and *-nā-* presents are in the system linked with root-aorists guarantees the differentiation in IE of present and aorist stems, and thus makes it probable that the present-stem also had a tense marked by the secondary endings (Strunk 1967:128). And since this conclusion strictly speaking applies to Greek and Aryan only, it is as well to recall that in Slavic the use as aorists of forms like *vede*, *minǫ* must also be secondary: they go back to the IE imperfects **wedhes/t* and *-neu-s/t* (Vaillant 1966:51,54,230).

b) The old doctrine concerning the *moods* was first called in question by Trubetzkoy who, in 1926, pointed out that the *-ā-*subjunctive of Latin and Old Irish (we should now add Tokharian, too) was in fact an *ā*-optative in use with thematic verbs beside the *-oi-*optative — but not, as a rule, in the same language. A quarter-century later Benveniste (1951) tried to connect these optatives with preterite forms like Lat. *eram laudābam* on the assumption that the past forms developed from optatives (cf. he would go for a walk = he used to). This sequence was rejected by Safarewicz (1954) who advocated the reverse order as has since Kuryłowicz (1956:35,131,1964b:115, 137,142; cf. also Thomas 1956:212, Ambrosini 1962:37f., 60f.; Schmidt 1966:25).

Since the *ā*-subjunctive can thus be linked with the *ā*-aorist of Balto-Slavic, it seems tempting to connect the *ē*-subjunctive with the *ē*-aorist of the same group. This would mean that *ē* in all persons — as in the Latin future *agēs agēmus* etc. — was the original type, and the alternation *ē/ō* found in Greek was secondary, a view represented by Hirt in 1928 (:296), and by Pedersen in 1941(:191); Pedersen went even so far as to deny its one-time existence in languages which do not possess it (Baltic, Slavic, Hittite).

The origin of the moods has been treated by Kuryłowicz: the optative is traced to a false division of an *ē*-aorist (e.g. **pō-y-ē-m* metanalyzed as **pō-yē-m* 'I should drink') (1964b:141), the subjunctive simply to a present indicative. The latter has also been treated by Risch (Kuryłowicz 1956:28, 71–74, 1964b:137f.; Risch 1965: 238).

The function of the moods has been examined by Gonda (1956), the elusive *injunctive* by K. Hoffmann (1967). The so-called second or future imperative has been given a new interpretation by Szemerényi (1954a).

c) The old doctrine concerning the *voices*, according to which IE had no passive but only active and middle, was challenged as early as 1924 by Marguliès who derived the middle from the passive (cp. *KZ* 58, 1931:113f. Cf. also Hirt 1928:133, 1934:204f.) Though long ignored, this doctrine has now been adopted and given transformational

support by Kuryłowicz (1964b:72–85)[104]. The closely linked problem of the agent with passive verbs has been examined by Schwyzer (1943), Rysiewicz (1956), Schmidt (1963b)[105]. On the other hand, Wistrand (1941) argued that the development of a middle into a passive was almost 'a law of evolution' and Gonda (1951) held that the Vedic *-ya*-passive was almost exclusively intransitive.

The middle voice has also been discussed, especially since the last war. According to Benveniste (1950a), it is the expression of a 'procès dont le sujet est le siège', which is slightly modified by Gonda (1960; see also Hirt 1934:203f.); it is given the label *subjectivum* by Bechert (1967:170; cf. also Savčenko 1961, and now also Neu 1968b: 1f., 52f., 93f.).

d) As concerns the *personal endings* of the *active*, the clear difference between present 1.sg. *-mi* and *-ō* was extended by Meillet (1937:227f.) to include the other persons of the singular: athematic *-mi, -si, -ti* contrasted in his view with thematic *-ō, -ei, -et*. Though this view has been accepted by Pedersen (1938:87f., 93f.), on account of certain difficulties the tide seems to have turned against it, and Kuryłowicz, who as late as 1964 still thought that *-ei* in the Greek 3.sg. was something archaic, in 1967 came round to the view that for IE only *-si, -ti* could be assumed (1964b:156, 1967:166).

Concerning the mediopassive endings, two major changes in our outlook have to be recorded. First, the primary set *-ai, -sai, -tai, -ntai* was in 1952 replaced with *-ai, -soi, -toi, -ntoi* by Ruipérez; his argument was based on internal evidence (the secondary set is *-so, -to, -nto*) and on certain archaic Greek dialects but was one year later confirmed by Mycenaean, and is now almost generally accepted (Ruipérez 1952: 8f.; cf. Szemerényi 1968d:717 with fn. 10; Kuryłowicz 1964b:59). Secondly, there has been a growing conviction that the 3rd person ending *-to* replaced an earlier *-o* (Vaillant 1946[106]; cf. Ambrosini 1966), and possibly even *-nto* an earlier *-r(o)* (Kuryłowicz 1956:41, but esp. 1964b:58f., 64f., 69f.). The *-r*-endings which earlier had been thought to be an exclusive Italo-Celtic property, have in our period been recognized to be present in Hittite and Tokharian as well and originally confined to the present. The various theories have now been critically surveyed by Neu who also advances a new theory (1968b:8f. and esp. 123f., 154f., 186f.; a critical review is also given by Calbioli 1962:56f.); note should be taken of Kammenhuber's new results also (1968), and Szemerényi 1970:215–31, 300–9.

e) *Aspect* has long been a category assumed for IE though its precise meaning is far from being clear and/or generally agreed. Meillet only speaks of aspect in connection with the pairs ἔχω / ἴσχω, μένω / μίμνω where the simple form is said to have 'aspect indéterminé' in that the 'end of the process is not envisaged' while the reduplicated

[104] But the intransitive-passive use of the 'middle' was declared older than the reciprocal or reflexive in his early paper on "Le genre verbal en indo-iranien", 1929. Cf. now also Flobert 1968.

[105] Le Bourdellès 1965 gives a critical assessment of the alleged object cases with passive. On Hartmann (1954) see Szemerényi 1956b.

[106] *-o* was an agent noun or noun of action!

forms have 'a. déterminé' in that they signal a process whose end is envisaged (Meillet 1937:204 — this seems the only passage in the *Introduction* dealing with aspect). Hirt on the other hand avoids the term and uses 'Aktionsarten' instead but subsumes under this both what is usually understood by aspect, i.e. the opposition of *perfective-imperfective*, and the so-called Aktionsarten such as durative, momentary, iterative etc. (see e.g. Hirt 1928:164f., 1934:225f.; the differentiation is insisted upon by E. Hofmann 1955:86f. but deliberately ignored by Lyons 1968:315). Kuryłowicz operates with a three-way opposition of *imperfective-perfective-stative* (i.e. 'negative' — 'positive' — 'complex' aspect) (Kuryłowicz 1964b:130; cf. also 25f., 122f., and 1964a:20f.). Since aspect was introduced from the Slavic languages and Slavic aspect is now clearly seen to be a Slavic innovation, Szemerényi (1969a) wishes to remove the notion of aspect from IE; his survey also gives an exhaustive bibliography of recent developments in this field, but note also Szemerényi 1970:286f.

IV. SYNTAX

A new departure was marked by Brugmann's decision to follow Ries's program and deal with the function of words not as Part I (Analytic) of Syntax but as an integral part of morphology, thus leaving for syntax the constructions only . Unfortunately, the 2nd edition of the *Grundriß* ended with vol. II — of which parts 2 and 3 embodied case-syntax — while of the planned syntax only fragments appeared (Ries 1894; Brugmann 1918, 1925). In spite of approving in principle of Ries's program, Wackernagel was moved by practical considerations to follow the well-trodden path and his highly successful *Vorlesungen* (1920–24) did not get beyond the syntax of the word. A real tour de force along similar traditional lines was Sommer's comparative syntax which managed to deal in 121 pages with all the syntactic problems (including sentence-syntax!) of the five languages taught at schools, i.e. German, English, French, Greek and Latin (Sommer 1921).

In 1924 Porzig's outline was published which wished to exploit Husserl's phenomenology and establish the autonomy of syntactic phenomena, independent of the speaker's psychology. Syntax would deal with (I) sentence structure, (II) semantic functions (including case-syntax), (III) semantic categories (substantive, adj., tempora, modi, etc.), (IV) sentence construction. A staunch defender of the opposite school arose in Havers who tried to show the great role played in syntactic performance — not least in mistakes — by psychological phenomena as conditions and motive forces (Havers 1931; see also H. Frei 1929).

The next decades see practical work rather than theoretical advance. A syntax of IE is contained in Meillet's *Introduction* (1937:355–77 — and 338–49 on the cases?) but this 22-page treatment is dwarfed by the two lavish volumes, altogether 560 pages, devoted to all the problems of syntax in Hirt's IE grammar (1934–37). But apart from these treatments, Indoeuropeanists can only point to such works — magnificent in their domain, to be sure — as the Greek syntax, covering practically all IE problems,

by Schwyzer (1950), and the likewise important Homeric syntax by Chantraine (1948–53), the Latin syntax by Szantyr (Hofmann and Szantyr 1965), the syntax of German by Behaghel (1923–32) and of Germanic by Hirt (1934), and last but not least the comparative syntax of the Slavic languages by Vondrák and Grünenthal (1928). To these could be added studies of varying size, e.g. on the nominal sentence by the Hungarian scholar Benigny (1929), and later by Hjelmslev (1948), Benveniste (1950b), also Schwyzer (1950:623), Lasso de la Vega (1955), C. Guiraud (1962), or the comprehensive treatment of verb constructions by the Rumanian comparatist Simenschy (1949), finally the programmatic sketch by Collinge (1960). But really new ideas first appear towards the end of our period. Pride of place goes to the healthy iconoclasm of Seiler (1960) who attacks current practice in which three quarters or even more of a work on syntax can be taken up with word-classes and word-forms which properly belong to morphology (as morpho-syntax). Syntax proper must deal with relations, not with the single morphemes; the principles are applied to one particularly difficult case, the relative clause (cf. Szemerényi 1968e) which has been treated by Benveniste, too (1958a), but also by Ivanov who (1965:185–289) tries to apply the methods of transformational grammar to the reconstruction of the IE sentence.[107]

V. LEXICON

In the reconstruction of the IE lexicon the reductionist trend, so clear in morphology, manifested itself in Meillet's treatment of the Latin vocabulary (Ernout and Meillet 1932[108]): the number of words which a previous generation optimistically described as etymologically 'solved' but were now labelled 'd'origine incertaine', 'd'origine inconnue' etc., increased alarmingly or, if you want, disappointingly.

Nonetheless, etymological dictionaries have been published in our period in numbers and on a scale unknown before. For Indo-European, the material collected in the last century was sifted and brought up to date by Walde and after his death the work was continued and supplemented by Pokorny; the two volumes with the index volume are out of print but still indispensable (Walde and Pokorny 1927–32) An abridged and modernised version, freed of much superfluous matter (esp. in Baltic and Norse) and enriched with Celtic material, was published by Pokorny between 1949–59; its index volume is now (1969) also complete. The Icelandic Dictionary by Jóhannesson (1951–56) is in actual fact the Walde-Pokorny rearranged according to the Icelandic items and confined to the Germanic material.

Study of the IE lexicon must of course rely on the history of the lexicon of the individual languages of the family. The safer their material, the easier the work of the

[107] We must not of course forget Watkins' important study "Preliminaries to the reconstruction of IE sentence structure" (1964), preceded by "Preliminaries to a historical and comparative analysis of the syntax of the Old Irish Verb" (1963). For some further work I refer to Szemerényi 1968b:23f.

[108] The latest edition (4th, 1959) is in its etymological comments substantially the same as the first.

Indo-europeanist. One cannot overrate the importance of the etymological dictionaries of Sanskrit, Greek, Latin, Lithuanian, Slavic, now in course of publication or already completed[109]: they are of profound influence on the work of the Indo-europeanist. Deplorable is, on the other hand, that we still do not possess an Old and Middle Iranian thesaurus or an up-to-date Old Celtic and Old Germanic dictionary; a return to Fick's plans is an urgent task. But beside these regional dictionaries there is need of monographic studies of certain sectors of the vocabulary in all IE languages: it is now a favorite subject in Latin and Greek at Paris, it used to be in the USA, and has been cultivated elsewhere, too, it is enough to mention Scherer's *Gestirnnamen*.

Lexical studies of necessity entail continuous checking of the received doctrine and the reduction of the number of elements of unknown origin. To be sure, it has often been said in recent times that IE etymological research has come to a dead end. As against this, Benveniste (1954a) has illuminated the semantic problems of etymological research and Szemerényi (1962b; 1967c, 1969b–c; cf. also 1968b:26–7) has not only formulated certain principles which should guide such research but also discovered numerous connexions either unnoticed before or not correctly assessed, and has given a historical survey and copious references.

VI. FRAGMENTARY INDO-EUROPEAN LANGUAGES

One of the characteristic features of our period is the preoccupation with ill-attested languages. Their texts and vocabulary have been studied and edited with great care, especially since the second war.

I am not thinking here of Hittite and Tokharian. Though of course fragmentary, they are languages which are attested by many texts and whose grammatical structure is very well known. I am thinking of languages which are known 1) from a greater or smaller number of brief inscriptions only, or 2) merely from names, or 3) from the fossils which they have left or are said to have left in other languages.

To the first category belong Messapic and Venetic in Italy. *Messapic*, a language once spoken in SE Italy, and now represented by ca. 300 inscriptions dated between 500 B.C. and the beginning of our era, is still very little known but the material has been published in *PID* (Conway, Whatmough and Johnson 1933a = *The Pre-Italic dialects of Italy* II) and by Ribezzo, Parlangèli, Haas, de Simone.[110] *Venetic* had also been known from inscriptions published in *PID* but the real upsurge in Venetic studies came in the late forties. It began with a re-evaluation of the linguistic evidence by Krahe, which was soon followed by a re-examination of the evidence itself, carried out

[109] For the outsider I may cite Mayrhofer (1956); Frisk (1954f).; Chantraine (1968f.); Walde and Hofmann (1930–56); Fraenkel (1955–65); Vasmer (1950–58); F. Sławski (1952–56, 1958–65, 1966–); Georgiev, Gulubov, Zaimov and Ilčev (1962–).

[110] Ribezzo published his *Corpus Inscriptionum Messapicarum* in his periodical *RIGI* (16, 19) and added *Nuove ricerche per il corpus...* (1944). After the war were published Parlangèli (1960); O. Haas (1962); de Simone (1964). For the method see also J. Friedrich (1966²:131); Pisani (1964³:233f.).

by Lejeune almost single-handed, and crowned by an unexpected and steady flow of new epigraphic material at Làgole di Calalzo on the upper reaches of the river Piave. The total corpus now numbers about 275 items and has been published in an exemplary fashion by Pellegrini and Prosdocimi (1967).[111] In Asia Minor, *Phrygian* is now known from 80 Old Phrygian inscriptions, dated in the 8th–5th cc. B.C., and 116 Late Phrygian inscriptions from Roman times (1st–4th cc. A.D.), to which some glosses and names can be added. The latest edition is due to O. Haas (1966) and Young (1969).

To the second category belongs e.g. *Illyrian* whose onomastic material was first collected and evaluated by Krahe (1925, 1929). But in the course of time the area claimed for Illyrian was ever more extended beyond its nucleus in the Balkans, the only area for which Illyrians are attested by ancient writers. Kronasser's sharp attack (1966) will prove salutary in confining the notion of Illyrian to the region guaranteed by the ancients. The only inscription claimed as Illyrian has now been shown to be in Greek (see Ognjenova 1959:794f.; Çabej 1963:98f.), so that once again only names are available for assessing the linguistic position and character of this branch of Indo-European. In much the same position is *Thracian*, spoken in antiquity in the Eastern part of the Balkans, although a ring-inscription has long been known and in 1965 a new three-line inscription was discovered (see Schmitt-Brandt 1967c), and *Macedonian* which in addition to names is known from a number of glosses (Chantraine 1966).

In the third category we may mention *Pelasgian* which is by some scholars postulated as a substratum language in Greece. Its assumption is based on Georgiev's observation, first made in the thirties, that in Greek there are certain lexical items which look IE but cannot be so as Greek elements; thus, e.g., τάφος 'tomb, grave-mound' can derive from IE **dhm̥bhos* but τύμβος, which is almost identical in meaning, cannot — according to Greek sound-laws. Georgiev has tried to show that this and many other items of the Greek vocabulary can be traced to an IE language whose phonetic development was rather different from that of Greek. His theory has not been left unimpugned,[112] on the other hand some converts have even tried to extend it to Italy (e.g. van Windekens 1960b; O. Haas 1960).

The sceptic might wonder whether this kind of brittle material really justifies the efforts so enthusiastically devoted to its collection and interpretation. It will be enough to mention here that even a fragmentary language like Phrygian can prove of great importance for comparative grammar. Thus the *-r*-endings appear in the inscriptions in, e.g., *abberetor* 'affertur', *addaketor* 'afficitur', and help to establish that the forms known from Latin and Celtic were not confined to these languages as had been thought before.

[111] At II 307 Lejeune's complete bibliography is given. Krahe (1950) was not the first to separate Venetic from Illyrian, it had been done before him by Kretschmer in his famous paper "Die vorgriechischen Sprach- und Volksschichten" (1943:134f.).

[112] Compare the debate between Hester, Georgiev and Merlingen in *Lingua* 13, 16, 18 in 1965–67.

VII. GROUPINGS AND SUBGROUPINGS

At the beginning of our period the 2nd edition of Meillet's *Dialectes* of 1922 marks a transition between old and new. The Stammbaum-theory manifests its continued force in Meillet's firm belief in certain post-IE unities (Indo-Iranian, Italo-Celtic, after it Italic), while the wave-theory influences his views on the relation of Baltic and Slavic. Even more striking is perhaps his belief that the geographical distribution of the various IE languages faithfully reflects their respective position in the original homeland. But the new era, the influence of the Italian neolinguistic school, persuaded Meillet of the importance of the notion of marginal languages as areas of conservatism, whereas Pedersen was inclined to view the existence in Italic, Celtic, Phrygian, Tokharian and Hittite of *r*-endings as proof of their once having formed a compact dialect group in the IE homeland. (Pedersen 1925:52; cf. Meillet 1931:4).

The importance of the post–IE unities has continued declining. The notion of Italo-Celtic unity, and even of Italic unity — i.e. a unitary period of Latin-Faliscan and Osco-Umbrian — can be regarded as dead and buried. The only unity that is still unquestioned is that of Aryan (Indo-Iranian), while the Balto-Slav unity, first undermined by Meillet, has had both defenders (see e.g. Szemerényi 1957; Arumaa 1964: 19f.) and opponents.[113]

The middle twenties also saw the appearance of a new idea of the expansion of IE. Kretschmer (1925) advanced the theory that certain IE elements in languages like Etruscan were due to early IE, i.e. Proto-IE, elements (cf. Schwyzer 1939:65), a theory later adopted and modified by Devoto (1943, 1944; reprinted 1958, 1967). In the thirties Specht attempted to correlate IE groupings with archaeologically identifiable cultures, e.g. the language group in which a verbal *-ē-* is innovated with the culture of the corded ware (Specht 1935). This trend has probably reached its climax in Devoto's *Origini* of 1962.[113a] Brandenstein (1936) has adduced arguments for the assumption earlier held by Charpentier (1926) that the Aryans were the first to leave the IE community, and this view has been upheld by Kuryłowicz, too, who assumes a further split of the European group into Northern and Southern sections (Kuryłowicz 1935:103f., esp. 119f., 1956:166f., 187f., 224).

In contrast to previous scholars who were inclined to trace many later differences to IE dialectal divisions, Arntz (1939) emphasized that there was hardly any possibility for proving such divisions and that it was more likely that later differences were due to the IE language being taken over and modified by alien substrata conquered by the expanding Indo-Europeans; similar views were subsequently advanced by Scherer, too (1954).

[113] The latest survey is by S. Karaliūnas (1968). The author is not above misreporting the subjects of his survey. Thus p. 38 he blandly announces that *t* does not develop into *d* in Slavic although he should know that the question is whether *tl* can change to *dl*, which is quite a different thing, and maintained by, e.g., Mikkola, Trubačev; cf. Szemerényi 1967c:11 with fn. 26 = *WSlav* 12, 1967: 277f., fn. 26; Trubačev (1966:69f., esp. 143).

[113a] See Szemerényi 1964c.

Whereas these scholars were primarily interested in the external history, so to speak, Pisani was attracted by the possibilities of post-IE contacts between IE languages which could lead to borrowings not only in the vocabulary but also in phonology, morphology and syntax (Pisani 1933). A consistent application of this principle has convinced Pisani that, e.g., Greek is the product of such contact phenomena between Anatolians, Osco-Umbrians etc., but also — and this is obviously the logical conclusion of this line of thought — that the model for IE is to be seen in Sanskrit: IE is in fact a kind of Proto-Sanskrit which was the vehicle of a brahmanic culture and was imposed on, and in consequence modified by, a number of subject populations, and gave rise to the various IE languages (Pisani 1959, see also 1967).

A quite different distribution, at least a quite different centre of gravity, is envisaged by Krahe who, on the basis of his river name studies, reached the conclusion that a common stock of names and identical derivational devices, found north of the Alps from the Baltic to the Atlantic, guaranteed an undivided Western IE community around the mid-second millennium B.C. called by him Ancient European, from which later Germanic, Celtic, Italic, Illyrian, and Baltic developed (Krahe 1954, 1957, 1959; add Schmid 1966). A straightforward application of the principles of linguistic geography, especially of the neolinguistic school, led Porzig (1954) to the view that the IE languages formed a Western and Eastern group and to the latter belonged Greek also, which was particularly close to Aryan. Georgiev is much more specific, and for a much earlier period (6th-4th millennia B.C.!); he assumes six groups: 1) Northern IE (Germanic-Baltoslavic-Tocharian), 2) Western IE (Celtic-Italic, etc.), 3) Central IE (Greek, Armenian etc.), 4) Eastern IE (Aryan, Albanian, etc.), 5) Aegaean (Thracian, Pelasgic etc.), 6) Asianic (Georgiev 1966:385f., with a map at 396).

VIII. ASPECTS OF RECONSTRUCTION

Homeland — Culture — Poetic Language

What we have discussed so far, presupposes the historical reality of an IE parent language. Long undisputed, this doctrine, too, has in our period been called in question by Pisani (1940:262f., 270), Trubetzkoy (1939a) and Allen (1953), of whom on account of his fame in other fields the Vienna Slavist is still often quoted. He thinks that the notion of a parent language is superfluous, that we can start from dissimilar languages which in the course of time grew more and more alike, that the IE languages are on the way from an inflexional stage of the East Caucasian type to the more developed agglutinative type represented by Finno-Ugrian and Altaic. These views, in many respects strangely reminiscent of the theories of Marr, the dictator of Soviet linguistics in the interwar period, have been rejected by Benveniste (1966:107f. — dates from 1953!), Thieme (1954:590f.), Leumann (1957:166), Scherer (1961:225f.),

and others,[114] have not inappropriately been described as 'the lapse of a great linguist', (Hoenigswald 1956:316), and can indeed be regarded as a 'bien vieux jeu': Thieme, and after him Scherer, have cogently shown that a linguistic system of the complexity of IE morphology cannot be the outcome of haphazard coincidences but proves genetic unity. However, in view of the facile suggestions that Indo-European is a mixture of Caucasian and Finno-Ugrian, or whatever other ingredients there may be, it is worth recalling Tesnière's observation that every language which has no morphology seems the product of a fairly recent mixture, and, conversely, that a language with rich morphology has every chance of not being the product of a recent language mixture (Tesnière 1939:92).

If, then, the parent language is not a fiction and — a second if — our methods lead to the reconstruction of something real, the question arises whether we can make any statement about the time and place in which it was spoken. Since various languages appear in areas which obviously cannot be identified with the IE homeland as early as ca. 2000 B.C., the time cannot be later than 2500 B.C. and is quite likely much earlier. As to place, it used to be accepted practice to consult the vocabulary, esp. the names of trees and plants: if the vocabulary shows that a certain tree was known to the Indo-europeans, and palaeobotany can establish the limits of the area in which that tree occurs and occurred, then the homeland is also delimited to some extent. The so-called beech-argument was generally used to establish that the homeland was west of a line running from Königsberg to Odessa. Likewise, the salmon-argument was used to place the homeland in the Baltic area. The most important contributions to the problem are now collected in the volume on *Die Urheimat der Indogermanen* edited by Scherer (1968)[115]. Oddly enough, the most important publications of recent years are not included. I mean of course the papers on the beech-argument by Eilers and Mayrhofer (1962) and by Henning (1963). (See now also Scherer 1967:14f. — also on the salmon — and Lane 1968.) As perhaps the most recent contribution Georgiev's view may be recorded who places the homeland between the Rhine and the Don, between the Baltic and the Aegaean, the latter definition adding the Balkans to the territory of Indogermania (Georgiev 1966:342f., 375, 385).

Indo-European culture can also be inferred from certain vocabulary items. In our period religion and poetic language have been studied intensively. For the former we now have Dumézil's *La religion romaine archaique* (1966) and the first of the planned three volumes of *Mythe et épopée* (1968) which sum up the results of his work in the last four decades, for the latter R. Schmitt's *Dichtung und Dichtersprache in idg. Zeit* (1967) gives a complete survey.[116] Humbach (1967) has since examined the kennings

[114] Cf. also Wagner (1959:241); Nehring (1960:143–6); Brandenstein (1962:45–9).

[115] See also p. X for more recent publications.

[116] On both fields see also Scherer (1967:22 and 23f.). On religion see also Havers (1961); Machek (1966:491f.); L. Grassi (1966). On Dumézil's work: Momigliano (1963:113f.); Haugen (1967). — On poetic language note also Schmitt's companion volume *Indogermanische Dichtersprache* (1968) which collects the most important papers on the subject.

of Germanic, Celtic and Greek, and has thrown doubt on their IE origin while Ivanov (1967) thinks that a Hittite poetic text gives the oldest verses in any IE language. Homer's rivers which allegedly fall from the sky have now been given a rational interpretation by Humbach: διιπετής is, as he says, 'rasch dahineilend' with the Caland-form διι – of the adjective διερός. See also Benveniste 1968 on Aryan poetic language.

Though not aiming at completeness, this survey will, it is hoped, give a not altogether distorted picture of the manifold activities in the various fields of IE studies carried on in Europe, and primarily in Western Europe, in the last half-century. The emphasis was on linguistic studies proper since 'extralinguistic' studies have been surveyed repeatedly.[117] Nevertheless, it is as well to note here that up to date treatises on IE grammar are not very plentiful. The only detailed work, produced in our period, is Hirt's *Indogermanische Grammatik* published in seven volumes between 1921–37. Meillet's *Introduction* which, by a coincidence, was also last published in 1937, was first published in 1903, and presents a kind of ageless Indo-European. Much the same can be said of Kieckers' *Einführung* which remained a torso,[118] or the elementary introductions given for German students by Krahe in the *Sammlung Göschen* and for English and Welsh students by Hudson-Williams.[119] Ample and personal information is contained in Pisani's *Glottologia indeuropea*.[120] An up-to-date and fairly comprehensive treatment of the problems, with abundant bibliographical references, is to be found in Szemerényi's *Einführung* of 1970. An IE Grammar on a grand scale, edited by J. Kuryłowicz, has made a start with vol. II on *Accent-Ablaut* from the pen of the editor, and vol. III/1, by Watkins, on the *verb*; further volumes will deal with phonology (Cowgill), the remainder of morphology (Watkins), and syntax (Ivanov).

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[117] However, the reader should be reminded of the critical surveys by Pisani in Pisani and Pokorny (1953:43f.); Scherer 1961. For the Soviet Union we now have a survey for the last half-century by Tronskij in the collective volume *Teoretičeskie problemy sovetskogo jazykoznanija* (1968).

[118] The *Einführung in das Studium der idg. Sprachwissenschaft* (1921) by Schrijnen (translated from the Dutch original by W. Fischer) was a revised edition (1917) of a work originally published in 1905. It is, however, an introduction to general linguistics rather, with an IE phonology added.

[119] The editors of the English "Teach Yourself" series were ill advised to entrust their volume on Comparative Linguistics (1966) to a complete novice. I fully agree with Anttila's harsh critique (1968). More serious but still fairly elementary is Lockwood 1969.

[120] Page XXXVf. gives references to additional work by Pisani and others.

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GEOGRAPHICAL LINGUISTICS

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I. THE 19TH CENTURY BACKGROUND

Geographical linguistics today is still very much under the influence of the research methods and goals that evolved during the last quarter of the 19th century. It was during this period that the basic instrument of geographical linguistics — the linguistic atlas — was developed; and this development, in turn, was strongly influenced by the linguistic theories of the times. The first two great linguistic atlases, those of Germany and of France, were very different in nature, and one is therefore tempted to say that geographical linguistics was born twice, once in Germany and once in France. Since both the 19th century methodology and this German/Romance dichotomy still survive to a considerable extent today, we need to examine their origin in some detail.

The Beginnings

The year 1876 brought a remarkable constellation of events in Germany. (1) It saw the first edition of Eduard Sievers' highly influential *Grundzüge der Lautphysiologie* (Leipzig 1876; later editions of 1881, 1885, 1893, 1901 bore the title *Grundzüge der Phonetik*), a book which may be said to have ushered in the 'age of phonetics' that was to last for several decades. (2) Even before Sievers' book had appeared, his new techniques of detailed articulatory analysis had been used brilliantly by his Swiss pupil Jost Winteler, author of *Die Kerenzer Mundart des Kantons Glarus* (Leipzig and Heidelberg 1876), a book that became a model for many further studies of the dialect of a single locality. (3) The year 1876 also saw the first printed profession of faith by that group of linguistic upstarts who soon became known as the Neogrammarians (*Junggrammatiker*). In his *Die Declination im Slavisch-Litauischen und Germanischen* (Leipzig 1876), August Leskien wrote: if we allow sound laws to have exceptions, 'so erklärt man im Grunde damit, dass das Object der Untersuchung, die Sprache, der wissenschaftlichen Erkenntniss nicht zugänglich ist' (p. xxviii). All linguistics had to be historical; and historical linguistics was dominated by the theory of the *Ausnahmslosigkeit der Lautgesetze*. (4) The fourth event of 1876 is a paradox. It saw the beginning of Georg Wenker's geographical investigation of German dialects, which after

many years of labor was eventually to become the German linguistic atlas. Wenker's purpose was to prove the truth of the *Ausnahmslosigkeit der Lautgesetze*, yet his results at first seemed to deny the validity of the theory altogether. Worse than that, this first extensive geographical investigation of 'dialects' seemed to show that there were no such things as 'dialects' in the sense of varieties of language that are neatly distinguished from one another. The result was utter confusion — and the birth, in Germany, of geographical linguistics.

The birth of geographical linguistics in France came about in a very different way. On May 26, 1888, before the Réunion des Sociétés savantes, the French scholar Gaston Paris delivered a highly influential lecture on 'Les parlers de France' (later published that same year in the *Revue des patois gallo-romans* 2.161–75). This was, in effect, a ringing call for a broad, systematic, and detailed study of the dialects of France — among other reasons so that local speech might be recorded in the many areas where it would soon succumb to the ever-present influence of standard French and then be lost forever. Gaston Paris' theoretical viewpoint is interesting and important. Historically, he suggested, there are no such things as 'daughter languages' (e.g. French as a daughter language of Latin); there is only a constant and unbroken development through time: 'Nous parlons latin'. And geographically there are no such things as 'dialects'; 'd'un bout de la France à l'autre les parlers populaires se perdent les uns dans les autres par des nuances insensibles'.

Gaston Paris was of course not without predecessors. In the previous year, inaugurating the new journal *Revue des patois gallo-romans*, the Abbé Rousselot had also called for detailed investigations of local speech, though without emphasizing the geographical approach. Seven years earlier, however, the Swiss scholar Jules Gilliéron had done just that: he had published a tiny linguistic atlas entitled *Petit atlas phonétique du Valais roman (sud du Rhône)* (Paris 1880), based on a questionnaire of some 200 words asked in 43 localities in the French (Franco-Provençal) area of Switzerland south of the Rhône. Gaston Paris envisaged a survey of French local speech which would be accomplished by a series of regional atlases, like that of Gilliéron for the Valais, eventually covering the whole French-speaking area. As matters turned out, a different approach was taken. Undoubtedly influenced by the remarks of Gaston Paris, perhaps also by the knowledge of what Wenker was doing in Germany, Gilliéron set about making plans for an atlas covering all of France. Within a decade fieldwork had begun, and within just over two decades the task was completed and the atlas published.

The First Two National Atlases

The method which Wenker used was to send a questionnaire of 42 short sentences (later revised to 40) to every school district, and to ask the teachers to rewrite them as best they could in the local dialect. This questionnaire was sent in 1876 to the Rhineland, in 1877 to Westphalia, in 1879 to the rest of north and middle Germany, and

in 1887 to the rest of what was then the German Empire. In this way Wenker obtained an enormous mass of data: 44,251 replies from 40,736 different school districts. (In later years the questionnaire was sent to all the remaining German-speaking areas of Europe, as well as to the Netherlandic- and Frisian-speaking areas. The atlas office in Marburg now contains completed questionnaires from some 52,800 localities.)

Processing this enormous mass of data was a task of extraordinary difficulty — far more than one man could accomplish. Fortunately, Wenker was joined in 1887 by the second great atlas pioneer, Ferdinand Wrede; and in later years a whole group of young associates gathered around these two scholars. Even when the materials had been analyzed, however, how should they be published? As early as 1881, in his *Sprachatlas von Nord- und Mitteldeutschland*, Wenker published six maps; but they were hard to interpret, and they were poorly received by fellow scholars. During the years 1892 to 1902 Wrede published reports on 84 different words (*ADA*, vols. 18–26 and 28). Though he urged other scholars to make their own maps on the basis of his written descriptions, apparently few of them took the trouble to do so. And since there can be no geographical linguistics WITHOUT maps, Wrede's written descriptions were futile — and were given up. Needless to say, Wenker, Wrede, and their associates drew their OWN maps; and it is these hand-drawn and still unpublished maps which constitute the so-called *Sprachatlas des Deutschen Reichs*. A total of 1646 such maps based on 339 different words are now available for use by scholars at the atlas office in Marburg. It was not until fifty years after Wenker had started his great work that the first published maps began to appear: Ferdinand Wrede, ed., *Deutscher Sprachatlas* (Marburg: Elwert, 1926–56). These are a selection of the hand-drawn maps, presented in simplified form, and with the addition of the German-speaking areas of Luxemburg, Switzerland, Austria, and Czechoslovakia.

Gilliéron's method was almost totally different from that of Wenker. He obtained the collaboration of Edmond Edmont, a grocer who was also a skilled amateur dialectologist; and fieldwork was carried out during 1897–1901. Edmont visited a total of 639 localities in the French-speaking areas of France, Belgium, Switzerland, and a bit of Italy, using a questionnaire of some 1400 items, expanded during the course of his work to some 1920 items. He acted as a kind of 'recording machine', writing down in phonetic notation the responses which he obtained from his informants (usually only one per locality) and sending these transcriptions to Gilliéron for processing. The results were published in J. Gilliéron and E. Edmont, *Atlas linguistique de la France* (Paris: Champion, 1902–10, 13 vols, with 1920 maps). Supplementary publications were *Table de l'Atlas linguistique de la France* (Paris: Champion, 1912), and *Atlas linguistique de la France, Supplément*, Vol. 1 (Paris: Champion, 1920). After the French atlas had been completed, the indefatigable Edmont during 1911–12 also investigated 44 localities on the Italian-speaking island of Corsica, using a revised and enlarged questionnaire. This led to the publication of the *Atlas linguistique de la France: Corse* (2 vols., Paris: Champion, 1914–15). (The copy which I have examined actually has no title page, but this is the customary citation.) The published work

remains incomplete; it includes only words beginning with the letters A through H, on 799 maps.

Comparison of the DSA and the ALF

It would be hard to imagine two linguistic atlases more different than the *DSA* (*Deutscher Sprachatlas*) and the *ALF* (*Atlas linguistique de la France*). The *DSA* covered an area in which local differences were, and still are, fully alive and vital (even when he speaks the standard language, no South German, Austrian, or Swiss wants to sound like a North German; and the standard language of an Alsatian is of course French, not German); the *ALF*, on the other hand, covered an area in which the standard language (essentially the dialect of Paris and the Ile-de-France) was, and still is, overwhelmingly dominant and all-pervasive. The questionnaire of the *DSA* was small (only 40 short sentences), but its coverage was in effect 100% (over 40,000 localities); the questionnaire of the *ALF* was quite large (some 1400 to 1900 items), but its coverage was very thin (only 639 localities, or approximately 2%). Because of the relative sizes of their questionnaires, the *DSA* provided little information on word geography, whereas the *ALF* provided a great deal. The *DSA* used the 'indirect method' — questionnaires mailed out to laymen; the *ALF* used the 'direct method' — direct interviews between fieldworker and informant. The *DSA* was based on the replies of untrained persons who generally used the standard orthography; the *ALF* was based on the transcriptions of a trained fieldworker using a detailed phonetic alphabet. The raw data of the *DSA* could not possibly be published directly, but first had to undergo many years of painstaking analysis; the raw data of the *ALF* — Edmont's phonetic transcriptions — could be, and were, published directly and untouched. The *DSA* maps, when finally published, could not possibly show the individual replies from over 40,000 localities, but had to make elaborate use of generalized isoglosses supplemented by detailed symbols for variations within these isogloss areas; the *ALF* maps could show Edmont's transcriptions for each of the 639 localities. The *DSA* data must represent at least in part what Ferdinand de Saussure was later to call *langue*; the *ALF* data represent, with full intention, what de Saussure called *parole* — the particular response of a particular informant at a particular time and place. The mass of data gathered for the *DSA* was so enormous that it took 50 years before they began to be published in map form; the relatively small amount of data gathered for the *ALF*, on the other hand, could be published within little more than a dozen years (fieldwork 1897-1901, publication 1902–10).

Three further differences between the *DSA* and the *ALF* concern not the atlases themselves but rather the recognition given to them, the scholars whom they attracted, and the further research which they stimulated.

Though Gilliéron's atlas was widely hailed (and criticized) in France as a great accomplishment, it also met with massive scholarly indifference. Unlike the *DSA* in Germany, it did not lead to the development of an 'atlas school' — an active and

expanding group of scholars working further on the atlas findings. Most of the important studies based on the *ALF* were written by Gilliéron, e.g. his *Généalogie des mots qui désignent l'abeille* (Paris: Champion, 1918). Gilliéron's studies dealt in large part with the internal causes of linguistic change, notably the effects of homonymy. To this extent they represent an advance over Neogrammarian theory, which saw in sound change and analogy the sole sources of linguistic change.

When the results of Wenker's and Wrede's atlas work gradually became known in Germany, long before publication of the *DSA* began, they were also widely hailed (and criticized). More importantly, however, they led to the kind of recognition which every scholar wishes: a gradually increasing acceptance of the value of the atlas, and an ever larger number of studies based directly and indirectly on it, notably in the series *Deutsche Dialektgeographie* (Marburg: Elwert, 1908ff.). By and large these studies dealt not with the internal causes of linguistic change, as did Gilliéron's studies, but rather with the external causes of linguistic change: the influence of such extra-linguistic factors as natural boundaries, political boundaries, ecclesiastical boundaries on the spread of linguistic forms. During the following decades these new insights of geographical linguistics were to lead to a drastic rewriting of works on the history of German and of the older Germanic languages.

Dialect Theory

To complete the picture of geographical linguistics as it developed in Western Europe during the late 19th and early 20th centuries, we must add a few words about what can perhaps be called 'dialect theory'. The term is in part a misnomer, because geographical linguists in general were not, and still are not, theory-oriented. Nevertheless, toward the end of the 19th century there gradually emerged a theory of what 'a dialect' might be.

At one extreme was the observation of Gaston Paris: that there are no such things as discrete 'dialects', but only gradual transitions throughout a given speech area. This is certainly true from an intralinguistic point of view. What in popular usage is called 'a dialect' shares countless linguistic features with other 'dialects'; and it is itself not linguistically uniform, but is typically crisscrossed by many different isoglosses. This was perhaps the first great discovery of geographical linguistics: that local speech forms exist in seemingly endless and bewildering variety.

If this was so, then the first task of the geographical linguist was to try to find some kind of order within this apparent chaos. One bit of regularity was soon discovered. By and large every phenomenon, such as the occurrence in a given word of a diphthong (changed, let us say, from an earlier monophthong), covers a definite area with definite boundaries. It is therefore possible to draw on a map an isogloss representing the outer limits of this pronunciation of this particular word. Wenker had hoped to prove the hypothesis of the *Ausnahmslosigkeit der Lautgesetze* by showing that a given

change (e.g. from monophthong to diphthong) would cover the same area for ALL words in which it occurred; but this turned out not to be the case. Under this strict interpretation, sound laws DO have exceptions. Yet the hypothesis — much too useful to be abandoned — could be rescued by adding a qualification to it. In a given area, we may assume, a given sound change IS regular, and takes place in all words in which the sound occurs; but words embodying this change then spread, and some spread farther than others. 'Every word has its own history.'

Just as the theory of the *Ausnahmslosigkeit der Lautgesetze* was too attractive and useful to be abandoned, so also was the traditional notion 'dialect'. Though it is true that isoglosses in general seem to crisscross in the wildest sort of confusion, a closer examination reveals two kinds of regularity. First, there are areas where two, three, four, perhaps a dozen or more isoglosses run together in 'bundles'; these can be interpreted as reflecting the outer limits of dialect areas. Second, there are also areas crossed by relatively few isoglosses but surrounded by relatively heavy concentrations of isoglosses, even 'bundles' of them; these can be interpreted as representing the centers of dialect areas. Typically, however, only the centers or 'focal areas' are relatively clear. They may be surrounded not by bundles of isoglosses but only by 'transition areas' or 'graded areas' through which runs a rather wide scattering of isoglosses; and off in the corners there may be 'relic areas' into which new forms have not yet spread. These observations seem to provide a relatively objective, intralinguistic method for defining the notion 'dialect'. In actual practice, however, many dialectologists followed a rather different procedure. They started out with an intuitive notion of the area covered by, let us say, the 'Swabian dialect'. They then looked for a focal area, for transitional areas, and for bundles of isoglosses that would support this intuitive notion; and, given the multiplicity of available isoglosses, they were able to find them.

An important finding of late 19th and early 20th century geographical linguistics was that the spread of linguistic forms can be correlated with extralinguistic phenomena. Before linguistic forms can spread from area A into area B, at least two conditions must be met. First, there must be active communication between the two areas; second, there must be factors which persuade the speakers of area B to accept the forms of area A, rather than vice versa. Factors which obviously prevent communication and hence also the spread of linguistic forms are natural geographical barriers such as mountainous areas without passes; less obviously, but more strikingly, they are also sociological barriers of various sorts, such as political boundaries. Factors which promote communication and hence also the spread of linguistic forms are mountain passes, rivers, and other communication routes, as well as strongly unified political areas. This leads to the recognition of 'active areas' — typically, unified political areas from which forms spread into surrounding regions; and of 'passive areas', which do not serve as the source for linguistic spread and which may be relatively unreceptive to influences from the outside. Active areas tend to be relatively uniform linguistically; passive areas tend to be rather highly differentiated linguistically.

II. RECENT DECADES

The most striking development of recent decades within the field of geographical linguistics is the great number of national and regional linguistic atlases that have been published, are now being published, or are planned for the future. Almost without exception they represent continuations of the methodologies developed in the first two great atlases — the *DSA* and the *ALF* — or, in some cases, a combination of the two. There have of course been refinements: a more careful selection of informants, improvements in interview techniques, more elaborate phonetic transcriptions, a greater emphasis on the connection between 'words and things' (*Wörter und Sachen*), and an improved presentation of the data gathered; but the basic methodologies have remained much the same. Lively discussions and controversies have been concerned almost entirely with techniques rather than with basic theory.

These many linguistic atlases could be presented from a number of different points of view: the chronology of their appearance; the extent to which they are national or regional; the methodologies which they represent; etc. Merely as a matter of convenience, we shall present them here in terms of the languages which they cover — beginning in the south with the Romance languages and working our way north to Germanic and Celtic.

Italian

An atlas which has come to be considered, along with the *DSA* and the *ALF*, as one of the three great 'classic linguistic atlases' is the *AIS*: Karl Jaberg and Jakob Jud, *Sprach- und Sachatlas Italiens und der Südschweiz* (Zofingen: Ringier, 1928–40), 8 vols., 1681 maps, plus supplemental data on map-sized pages 1682–1705. Fieldwork, begun in 1919 and completed in 1928, was carried out by three highly qualified fieldworkers: Paul Scheuermeier (306 points south to Rome), Gerhard Rohlfs (81 points in southern Italy), and Max Leopold Wagner (20 points on Sardinia). Three questionnaires were used: a reduced questionnaire of some 800 items (used especially in 28 urban centers), a normal questionnaire of some 2000 items (used for 354 interviews), and an enlarged questionnaire of some 4000 items (used for 30 interviews of particular interest), for a total of 412 interviews at 407 different points. The area covered included the Romansh and Italian speaking parts of Switzerland, all of Italy including Sicily and Sardinia, but not (French) Corsica (since this was covered by Edmont, see above; and by Bottiglioni, see below). Special emphasis was placed on the connection between *Wörter und Sachen*. Methodology and presentation are essentially the same as in the *ALF*: maps show the raw phonetic transcriptions for each point, often supplemented by drawings (for *Wörter und Sachen*).

An atlas of Corsica (which was also covered by the *ALF: Corse*) is Gino Bottiglioni, *Atlante linguistico-etnografico italiano della Corsica*, promosso dalla R. Università di Cagliari (Pisa 1933–42), 10 vols., 2001 maps; plus the supplementary volumes *Intro-*

duzione (Pisa 1935) and *Disegni di G. Colucci* (Pisa 1935). Interviews in 55 localities were made during 1928–32. Bottiglioni attempted to improve on the methodology of the *ALF* (and of the *ALI*; see below) by using a questionnaire composed of phrases, sentences, and proverbs rather than largely individual words; by paying special attention to spontaneous speech; and by giving a 'median' transcription of the informants' speech rather than a purely impressionistic one. His data thus presumably come closer to representing langue rather than parole.

An atlas of Sardinia (which was also included in the *AIS*) is Benvenuto Terracini and Temistocle Franceschi, *Saggio di un Atlante linguistico della Sardegna*, in basi di rilievi di Ugo Pellis† (Turin: Istituto dell'Atlante Linguistico Italiano annesso alla Università di Torino, 1964), Vol. 1 maps (1–60), Vol. 2 text (176 pp.). This is based on the fieldwork at 109 localities done in 1933–35 by Ugo Pellis for the *ALI* (*Atlante Linguistico Italiano*), which we now need to discuss.

The *ALI* was conceived in the early 1920s by a number of Italian linguists, including M. Bartoli, G. Bertoni, G. Vidossi, and Ugo Pellis. It was originally hoped that interviews could be completed by a single fieldworker, Pellis, within five to six years. Pellis began fieldwork in 1925; but his labors proved far more time-consuming than had been expected. Using at first a questionnaire of over 7000 items, he was able to complete some 700 interviews up to his death in 1943. Fieldwork was resumed in 1952, under the continuing direction of Vidossi and now also of Benvenuto Terracini and, later, of Giuliano Bonfante. With the aid eventually of six more fieldworkers, interviewing was completed in 1964. The *ALI* is eventually to be published under the auspices of the Istituto dell'Atlante Linguistico Italiano annesso all'Università di Torino. (Cf. Temistocle Franceschi, "Achèvement des recherches dialectales pour l'Atlante Linguistico Italiano," *Verhandlungen des Zweiten Internationalen Dialectogenkongresses*, 1.232–8; = *ZMaF*, Beihefte, Neue Folge, Nr. 3, 1967.)

Spanish-Portuguese-Catalan

Only recently has an attempt been made to produce a linguistic atlas for the entire Iberian peninsula: *Atlas lingüístico de la Península Ibérica* (Madrid: Consejo Superior de Investigaciones Científicas, 1962ff.). Volume 1, *Fonética*, comprises 19 pages of text and 75 maps. The area investigated includes some 800 points in Portugal and Spain, including Ibiza, Mallorca, and Menorca. The methodology used thus far is essentially identical with that of the *ALF*: phonetic transcriptions entered on a map at each of the points investigated.

Three regional atlases within this area also follow the methodology of the *ALF*. The largest is A. Griera, *Atlas lingüístic de Catalunya* (Barcelona: Institut d'Estudis Catalans), Vol. 1 (1932), Vol. 2 (1924), Vols. 3 and 4 (no date) (these contain maps 1–786); and (Abadía de Sant Cugat del Vallès) Vol. 5 (1942), Vol. 6 (1962), Vol. 7 (1963), Vol. 8 (1964) (these contain maps 787–1276). The work covers 105 points in

Catalonia. The same author has also published an *Atlas lingüístic d'Andorra* (Andorra 1962), pp. xx, 1232 maps (two per page), pp. 15, plus photographs. The work covers six points in Andorra. The third regional atlas is Manuel Alvar, con la colaboración de A. Llorente y G. Salvador, *Atlas lingüístico y etnográfico de Andalucía* (Universidad de Granada, 1961–65), 4 vols., 1175 maps.

Catalan-French

An atlas which includes 382 points in southwestern France is Henri Guiter, *Atlas linguistique des Pyrénées-Orientales* (Paris: Centre Nationale de la Recherche Scientifique, 1966), pp. 32, xx, 565 maps. Though this work is in general inspired by the methodology of the *ALF*, the presentation is interestingly different. Instead of writing on each map the phonetic form recorded at each point, Guiter draws isoglosses around points which all use the same form, presents this common form in large letters, and gives smaller transcriptions only where they are necessary for individually different points. As a result, the geographical structure of speech becomes immediately evident to the reader.

French

Guiter's atlas is associated with, though not directly a part of, a project known as the *Nouvel Atlas linguistique de la France par régions*. The proposal that the findings of the *ALF* should be supplemented and enlarged by a series of regional atlases was first made in 1939 by Albert Dauzat. Elaborate plans were drawn up, with the hope that 12 regional atlases might be compiled (plus, as a 13th, once again Corsica). Thus far only one such atlas has been published more or less along the lines originally planned for the series: Jean Séguy, *Atlas linguistique et ethnographique de la Gascogne* (Toulouse: Institut d'études meridionales de la Faculté des lettres), Vol. 1 (1954), maps 1–220; Vol. 2 (1956), maps 221–562; Vol. 3 (1958), maps 563–1092. The atlas covers 169 localities. Similar in nature, though deviating considerably from the original plans, is P. Gardette, *Atlas linguistique et ethnographique du Lyonnais* (Institut de Linguistique Romane des Facultés Catholiques de Lyon), Vol. 1 (1950), maps 1–312; Vol. 2 (1952), maps 313–712; Vol. 3 (1956), maps 713–1320. The atlas covers 75 points. A third regional atlas connected with this series is Pierre Nauton, *Atlas linguistique et ethnographique du Massif Central* (Paris: Centre National de la Recherche Scientifique), Vol. 1 (1957), maps 1–620; Vol. 2 (1959), maps 621–1244; Vol. 3 (1961), maps 1245–1899; Vol. 4 (1963), *Exposé générale, table-questionnaire, index alphabétique*, pp. 222.

A further regional atlas at the northern edge of the French area, and not connected with the above series, is the *Atlas linguistique de la Wallonie*, Tableau géographique des parlers de la Belgique romane d'après l'enquête de Jean Haust† et des enquêtes complémentaires (Liège: Vaillant-Carmanne), Vol. 1 (1953), *Introduction générale*,

aspects phonétiques, by Louis Remacle, 301 pp., 100 maps; Vol. 2 (not yet published), *Aspects morphologiques*; Vol. 3 (1955), *Les phénomènes atmosphériques et les divisions du temps*, by Élisée Legros, 381 pp., 208 notices, 70 maps. Fieldwork for this atlas was begun in 1924 by Haust, who made direct interviews but often preceded them with the indirect method by sending his questionnaire to qualified local speakers. The atlas covers 300 localities and thus provides an invaluable supplement to the *ALF*, which included only 23 points in the Walloon area of Belgium. Because of the very dense coverage, it was not possible to follow the *ALF* procedure of writing phonetic transcriptions at each point on the map. Instead, each point is provided with a symbol that is explained in an accompanying legend. The result is admirable: the geographical structure of language becomes immediately evident.

A final French (more exactly: Franco-Provençal) work deserves mention, even though it is much earlier than any of the above and is of quite a different nature. Toward the end of the 19th century the three Swiss scholars Louis Gauchat, Jules Jeanjaquet, and Ernest Tappolet planned to publish an *Atlas phonétique de la Suisse romande*, in connection with their monumental *Glossaire des patois de la Suisse romande* (1942ff.). Though plans for this atlas had to be abandoned, they produced an excellent substitute in their *Tableaux phonétiques des patois suisses romands*, relevés comparatifs d'environ 500 mots dans 62 patois-types, publiés avec introduction, notes, carte et répertoires (Neuchâtel: Attinger, 1925), pp. xviii, 197. Two aspects of this work are noteworthy. First, the fieldwork (1904–07) was always done by two persons, both highly trained. Jeanjaquet served everywhere as the primary fieldworker, and it is his transcriptions that are reproduced in the tables; but everywhere he was also accompanied by a second fieldworker, either Gauchat or Tappolet, who also transcribed the responses of the informants; and their transcriptions, where significantly different, are given in footnotes. (The differences between the transcriptions of the two fieldworkers, and their apparent causes, make a fascinating topic for study.) Second, the transcribed forms were not entered on maps, as in the case of the *ALF* and most other atlases using the direct method, but were reproduced in the form of tables. The names of the 62 points are entered on facing pages (points 1–31 on the left-hand page, points 32–62 on the right-hand page); and on the same line as the name of each point are listed, in numbered columns, Jeanjaquet's transcriptions for each item in the questionnaire. Such a tabular presentation of data in one sense defeats the very purpose of geographical linguistics: there can be no geographical linguistics without geography, which means maps. In the *Tableaux phonétiques*, however, this disadvantage is to a great extent overcome by the fact that the transcriptions of each item for all 62 points are presented on facing pages. With the aid of a single accompanying map, the reader very soon learns the relative geographical locations of all the points covered; and, as a result, this type of presentation is every bit as helpful as — in some ways even more helpful than — that of such atlases as the *ALF*, where the raw materials (the fieldworker's transcriptions) are entered on a map. If only the raw materials are given, a tabular presentation is (at least for a small, regional atlas) just as

useful as a cartographic presentation, and of course far less expensive. A cartographic presentation becomes more revealing only if it uses symbols at each point, together with a legend explaining the symbols, as in the *Atlas linguistique de la Wallonie*. We shall return to this matter of tabular vs. cartographic presentation in Section III, Future Directions, below.

German

Just as the methodology of the *ALF* has continued through many decades to exert a powerful influence in the Romance-speaking countries, so also has the methodology of the *DSA* in the German-speaking countries — together with a strong historical emphasis inherited from the Neogrammarians. We may recall that, because of the nature of its questionnaire (only 40 short sentences), the *DSA* produced very little information on word geography. In order to compensate for this, plans were made during the early 1920s for a German word atlas. This eventually resulted in a mammoth undertaking under the direction of Walther Mitzka. Mitzka designed a questionnaire of 200 items (188 individual words, 11 sentences, 1 phrase), and in January, 1939, he began sending it out to the local school teachers, just as Wenker had done 63 years before him. Replies were received from 38,369 different localities. The task of editing this enormous mass of material and of preparing maps was again laborious and time-consuming; but this time it proceeded with remarkable speed, and the first volume appeared within twelve years: Walther Mitzka, ed., *Deutscher Wortatlas* (Giessen: Schmitz), Vols. 1ff., 1951ff. Maps and presentation are similar to the *DSA* so that a comparison of the two is made easy. As of this writing, 15 volumes containing 166 maps have been published, and work is still continuing at the atlas office in Marburg.

A dialect geographical work very different in nature from any of those described thus far is Eberhard Kranzmayer, *Historische Lautgeographie des gesamtbairischen Dialektraumes* (Vienna-Graz-Cologne: H. Böhlaus Nachfolger, 1956), pp. xiv, 143, plus (unbound in a separate folder) 27 phonological maps and 4 supplementary maps. Though this has many of the qualities of a linguistic atlas, it is primarily a detailed historical phonology of the Bavaro-Austrian speech area. The maps show phonemic forms surrounded by the isoglosses indicating their outer limits. The work is of great value for the study of historical phonology, though it suffers from the fact that the source of the data is nowhere made clear.

Just as in France, there has also arisen in the German-speaking countries a desire for regional atlases, and the series *Deutscher Sprachatlas — Reihe: Regionale Sprachatlanten* has been established. Thus far four works in this series have appeared, or have begun to appear. (1) *Siebenbürgisch-deutscher Sprachatlas*, ed. by Karl Kurt Klein and Ludwig Erich Schmitt (Marburg: Elwert), Vol. 1, *Laut- und Formenatlas*, auf Grund der Vorarbeiten von Richard Huss und Robert Csallner bearbeitet von Kurt Rein, Part 1 (1961), pp. 21, maps 1–60; Part 2 (1964), maps 60–150. (2) *Luxem-*

burgischer Sprachatlas, ed. by Ludwig Erich Schmitt, *Laut- und Formenatlas* von Robert Bruch†, für den Druck vorbereitet von Jan Goossens (Marburg: Elwert, and Luxemburg: Publications nationales du Ministère des Arts et des Sciences, 1963), 16 pp., 174 maps. (3) *Tirolischer Sprachatlas*, ed. by Karl Kurt Klein and Ludwig Erich Schmitt, unter Berücksichtigung der Vorarbeiten Bruno Schweizers† bearbeitet von Egon Kühebacher (Innsbruck: Tyrolia-Verlag, and Marburg: Elwert), Vol. 1 (1965), pp. viii, 38, and 75 maps. (4) *Schlesischer Sprachatlas*, ed. by Ludwig Erich Schmitt (Marburg: Elwert), Vol. 2 [sic] (1965), *Wortatlas*, von Günter Bellmann, 20 pp., 90 maps; Vol. 1 [sic] (1967), *Laut- und Formenatlas*, von Günter Bellmann unter Mitarbeit von W. Putschke und W. Veith.

A regional atlas appearing outside of this series is Hermann Hucke, *Thüringischer Dialektatlas*, begründet und bearbeitet auf Grund des von Thüringer Dialektologen unter Mitwirkung der Lehrerschaft gesammelten Sprachguts (Berlin: Akademie-Verlag), fascicle 1 (1961), pp. 109, maps 1–20; fascicle 2 (1965), maps 21–40. A regional word atlas is Ernst Schwarz, *Sudetendeutscher Wortatlas* (Munich: Lerche), Vol. 1 (1954), pp. 42, maps 1–35; Vol. 2 (1955), pp. 41, maps 36–70; Vol. 3 (1958), pp. 45, maps 71–104.

An atlas which uniquely combines the German tradition of the *DSA* with the Romance tradition of the *ALF* and the *Wörter und Sachen* emphasis of the *AIS* is the regional atlas of German-speaking Switzerland: *Sprachatlas der deutschen Schweiz* (*SDS*), edited by Rudolf Hotzenköcherle. Though the *SDS* is conservatively traditional, it combines the best of the Romance and German traditions with Swiss thoroughness. Like the *DSA* it provides dense coverage (565 points in German-speaking Switzerland, or about 1/3 of all inhabited localities; plus 8 German-speaking villages in neighboring Italy); like the *ALF* and the *AIS* it has an extensive questionnaire (some 2600 items). Like the *DSA* it is historically oriented; like the *ALF* and the *AIS* it uses the direct method (the fieldworkers were Hotzenköcherle himself for 25 points, Konrad Lobeck for 263 points, Rudolf Trüb for 150 points, Robert Schläpfer for 135 points). Initial planning for the *SDS* was begun by Hotzenköcherle and the late Heinrich Baumgartner (died 1944) in 1935. Fieldwork occupied a period of 20 years: from 1939 through 1958. Publication began in 1962 with two introductory volumes entitled *Einführung in den Sprachatlas der deutschen Schweiz*, by Rudolf Hotzenköcherle (Bern: Francke, 1962), Vol. A, *Zur Methodologie der Kleinraumatlanten*, pp. xv, 144, 2 pages of photographs; Vol. B, *Fragebuch, Transkriptionsschlüssel, Aufnahmeprotokolle*, pp. [v], 174. Two volumes of the atlas itself have thus far appeared: *Sprachatlas der deutschen Schweiz* (Bern: Francke), Vol. 1 (1962), *Lautgeographie*: *Vokalqualität*, pp. [vii], 166 maps and lists, 2 pages of index; Vol. 2 (1965), *Lautgeographie*: *Vokalquantität, Konsonantismus*, pp. [viii], 204 maps and lists, 3 pages of index. Six further volumes are promised: Vol. 3 on morphology and syntax, and Vols. 4–8 on word geography. The maps of the *SDS* present an effective compromise between the undigested raw data of the *ALF* (a chance phonetic transcription for each locality) and the necessarily elaborate interpretations of the *DSA*

(normalizations of thousands of data from naive sources). As in the *Atlas linguistique de la Wallonie*, each atlas point is provided with a symbol representing an approximate phonetic quality for a given vowel or consonant. These symbols are skillfully chosen so as to reveal immediately something of the geographical structure of speech. Where the data are complicated, lists are provided giving the fieldworkers' phonetic transcriptions of a given form at each of the 573 localities.

Two further regional German atlases that will probably be similar in nature to the *SDS* are: Ernest Beyer, *Atlas linguistique et ethnographique de l'Alsace*; and Marthe Philipp, *Atlas linguistique de la Lorraine germanophone*. For a discussion of these and other projected regional German atlases, see Ludwig Erich Schmitt et al., "Regionale Dialektologie der deutschen Sprache: Arbeitsberichte der Forschungsunternehmen", *ZMaF* 32.97–169 (1965).

Netherlandic

Nowhere is the continuing dichotomy between the German and the Romance traditions of geographical linguistics more evident than in the Netherlandic-speaking countries, Holland and (northern) Belgium. Here two complete atlases are being produced: the one following the tradition of the *DSA*, with modifications and improvements; the other following the tradition of the *ALF* — though it is strictly speaking not a single atlas but a complete series of regional atlases. Fortunately, both undertakings have refused to be bound by irrelevant political borders (a common sin in dialect studies): both include the entire Netherlandic-speaking area. For good measure, both also include (again fortunately, though somewhat irrelevantly) the Frisian-speaking areas of Holland. It is probably inevitable that these atlases should stop at the political border between Holland/Belgium and Germany, despite the fact that there is no linguistic border at this point. Happily, this artificial division has been bridged by still a third atlas — one that covers eastern Holland and the neighboring areas of Germany. We now need to describe each of these three atlases, in the order mentioned.

Plans for a Netherlandic linguistic atlas were first formulated in the early 1920s by the Belgian scholar L. Grootaers and the Dutch scholar (and Germanist) G. G. Kloeke. The first result of their collaboration was their *Handleiding bij het Noord- en Zuid-Nederlandsch dialectonderzoek* (The Hague: Nijhoff, 1926). This included a review of Netherlandic dialect research up to the year 1925, as well as a carefully designed base map that was to be used for their atlas. The book was Volume 1 in the important series *Noord- en Zuid-Nederlandsche Dialectbibliotheek* which Grootaers and Kloeke edited. The second volume in this series was Kloeke's great historical and dialect-geographical masterpiece: *De Hollandsche expansie in de zestiende en zeventiende eeuw en haar weerspiegeling in de hedendaagsche Nederlandsche dialecten, proeve eener historisch-dialectgeographische synthese* (The Hague: Nijhoff, 1927), a brilliant demonstration of the geographical spread of linguistic forms. During the following years

Grootaers and Kloeke elaborated plans for their atlas. They decided to use the indirect method of sending out questionnaires to be answered at many different localities. Instead of having the questionnaires answered by school teachers, however, they assembled a team of 'correspondents' — local dialect enthusiasts who could select proper informants or, if they were themselves competent dialect speakers, answer the questions directly. Publication of the atlas began about a decade later: G. G. Kloeke, *Taalatlas van Noord- en Zuid-Nederland* (Leiden: Brill, 1939), fascicle 1, foreword and 15 maps. Further fascicles, each containing 10 to 15 maps, have continued to appear at irregular intervals. Starting with the 5th fascicle of 1952, editorship of the atlas was transferred to the Dialectencommissie of the Koninklijke Nederlandse Akademie van Wetenschappen in Amsterdam. The maps of this atlas represent a compromise between those of the *ALF* (raw materials — i.e. phonetic transcriptions — given for each locality investigated) and of the *DSA* (isoglosses plus symbols for deviant spellings, based on — but to some extent obscuring — the data themselves). In the *Taalatlas*, each point from which data were received is marked with a symbol; the meanings of the symbols are explained in an accompanying legend. As a result, the reader immediately perceives something of the geographical structure of speech; and, at the same time, he also sees the points from which data were — or were not — received. This is a great improvement over the methodology of the *ALF*, which fails to give an immediate picture of the geographical structure of speech (the reader must laboriously decipher it himself). It is also a great improvement over the methodology of the *DSA*, since the reader is able to give his own interpretation to the data represented by the symbols and is not bound by the interpretation of the editors. As we have already seen, this same use of symbols-plus-explanatory-legend was later used to great effect by the *Atlas linguistique de la Wallonie* (1953ff.) and by the *Sprachatlas der deutschen Schweiz* (1962ff.).

The second Netherlandic linguistic atlas — actually a series of regional atlases all using essentially the same questionnaire — was founded by the Belgian scholar Edgard Blancquaert, who had been a pupil of Gilliéron and Dauzat in Paris. In 1926 he published a *Dialect-atlas van Klein-Brabant* (Antwerp: De Sikkel), Vol. 1, pp. 239 (introduction and texts); Vol. 2, 150 maps. For this, using a questionnaire of 139–41 items (partly words, partly sentences) with himself as fieldworker, he investigated the speech of 59 points surrounding his native village of Opdorp. He then conceived the notion of expanding this into a series of regional atlases that would cover the entire Netherlandic (and Frisian) dialect area, entitled *Reeks Nederlandse Dialect-atlassen.* This series began to appear in 1930, edited first by Blancquaert, then (starting with no. 7) by Blancquaert and Willem Pée, and after Blancquaert's death in 1964 by Pée. Blancquaert's original study was republished in 1952 as Vol. 1 of the series. The whole series now comprises, or will comprise, the following (all Antwerp: De Sikkel):

1. E. Blancquaert, *Dialect-atlas van Klein-Brabant*, 2nd ed. with the collaboration of Fr. Vanacker, 1952.

2. E. Blancquaert and H. Vangassen, *Dialect-atlas van Zuid-Oost-Vlaanderen*, 1930.
3. E. Blancquaert, *Dialect-atlas van Noord-Oost-Vlaanderen en Zeeuwsch-Vlaanderen*, 1935.
4. H. Vangassen, *Dialect-atlas van Vlaamsch-Brabant*, 1938.
5. E. Blancquaert and P.J. Meertens, *Dialect-atlas van de Zeeuwsche Eilanden*, 1940.
6. W. Pée and E. Blancquaert, *Dialect-atlas van West-Vlaanderen en Fransch-Vlaanderen*, 1946.
9. A. Weijnen, *Dialect-atlas van Noord-Brabant*, 1952.
15. K. Boelens and G. van der Woude, with the collaboration of K. Fokkema and E. Blancquaert, *Dialect-atlas van Friesland*, 1955.
7. W. Pée, *Dialektatlas van Antwerpen*, 1958.
8. E. Blancquaert, J.C. Claessens, W. Goffin, and A. Stevens, *Dialektatlas van Belgisch-Limburg en Zuid Nederlands-Limburg*, 1962.
10. A.R. Hol and J. Passage, *Dialekt-atlas van Oost-Brabant, Noord-Limburg en de Rivierenstreek*, 1966.
16. A. Sassen, *Dialektatlas van Groningen en Noord-Drente*, 1967.

Numbers 11–14, still to appear, are as follows:

J. Daan, *Dialektatlas van Noord-Holland.*
L.A. van Oyen, with the collaboration of E. Blancquaert and Chr. J. van de Voet, *Dialektatlas van Zuid-Holland.*
A.R. Hol and H. Entjes, *Dialektatlas van Gelderland en Zuid-Overijsel.*
W.G. Rensing, *Dialektatlas van Noord-Overijsel en Zuid-Drente.*

All of these atlases follow the same general plan. A first volume reproduces the phonetic transcriptions of the 141 items (mostly short sentences) in the questionnaire. A second volume then selects 150 (usually) of these items and reproduces them in map form, in the manner of the *ALF*. In making their phonetic transcriptions, the author-fieldworkers tried in effect to perform as recording machines, and to note as accurately as possible the responses of their informants. Because so many of the items in the questionnaire are short sentences, many words are recorded only as they appear in the flow of speech (often in unstressed variants), and the reader is then unable to recover the 'citation forms' that they would show in isolation. This considerably reduces the value of these atlases.

The third atlas (Netherlandic-German) is K. Heeroma, *Taalatlas van Oost-Nederland en aangrenzende gebieden* (Assen: Van Gorcum, 1957ff.). This is a word atlas which covers the eastern half of the Netherlands and the adjacent part of northwest Germany. Each fascicle contains 10 word maps plus extensive commentary. The atlas is a refreshing and unique exception to the customary practice of treating political boundaries as if they were also linguistic boundaries, and drawing the limits of linguistic atlases accordingly.

Frisian

Frisian is spoken today in three geographically separate areas: (1) West Frisian, in most of the Dutch province of Friesland and on the adjacent islands of Schiermonnikoog and (most of) Terschelling (some 350,000 speakers); (2) East Frisian, in the so-called Saterland area of Oldenburg in Germany, comprising the three parishes of Ramsloh, Strücklingen, and Scharrel (a few thousand speakers); and (3) North Frisian, in a narrow strip along the west coast of German Schleswig between Husum and the Danish border, on the offshore islands of Amrum, Föhr, Sylt, and the so-called Halligen, and on the island of Helgoland (altogether some 10,000 speakers). Probably all adult speakers of Frisian are bilingual, speaking either Frisian and Dutch, or Frisian and German.

Of these three areas, only the largest — West Frisian — has been fully investigated from the point of view of geographical linguistics. As already mention above, this area is included in the various maps of the *Taalatlas van Noord- en Zuid-Nederland*; and it is included more particularly in Vol. 15 of the *Reeks Nederlandse Dialect-atlassen*, namely the *Dialect-atlas van Friesland.* (This latter includes 71 Frisian-speaking localities, plus 3 localities where both Frisian and Dutch are spoken). An earlier study of this area (minus the islands of Schiermonnikoog and Terschelling) is J.J. Hof, *Friesche Dialectgeographie* (The Hague 1933), with 65 maps.

Though the East Frisian area is too small to warrant an atlas, the dialect geography of North Frisian would be an ideal subject for study. Despite the small size of the area and the small number of speakers, local speech here exhibits an extraordinary degree of phonological and lexical variety.

English

For whatever reasons, England was the last of the large Western European nations in which scholars showed enough interest in geographical linguistics to undertake a linguistic atlas. Perhaps this was because local speech is, in general, held in low esteem in England — though probably not more so than in France. Interestingly, the impulse for a linguistic atlas seems to have come — twice — more or less from outside of England. It came first from John Orr, Professor of Romance Philology at Edinburgh and a former pupil of Gilliéron, who in the mid 1930s proposed an English atlas along the lines of Jaberg and Jud's *AIS.* And it came again in 1946, when Eugen Dieth, Professor of English Philology at Zurich, urged the Philological Society to form a committee charged with establishing a linguistic atlas for all of Great Britain. (How great a role the Swiss have played in geographical linguistics! Gilliéron was Swiss. Jaberg and Jud were Swiss. Gauchat, Jeanjaquet, and Tappolet were Swiss. Dieth was Swiss. Hotzenköcherle is Swiss. And, as we shall see in a moment, Kolb is Swiss.)

Initial planning for a *Survey of English dialects* began in 1946 on the initiative of

Dieth in collaboration with Harold Orton, professor at Leeds. (Dieth was to die in 1956, before the results of his labors could be realized.) It was of course assumed from the start that this *Survey* would include the English of both England and Scotland. Yet the irrational often prevails even in scholarly affairs, and this was not to be the case. In 1950 a separate *Linguistic survey of Scotland* was established at Edinburgh (see below), and the *Survey of English dialects* was thenceforth confined to England only. A tentative questionnaire was designed and tested in preliminary fieldwork during 1947–50. In its revised form it came to consist of 1092 numbered items (actually comprising 1322 questions) grouped into nine 'books'. The questions concentrate heavily on agricultural life, and in the choice of informants the aged were preferred. Nine fieldworkers conducted interviews at 311 different localities, and the fieldwork was completed by 1961. Results began to be published in 1962: *Survey of English dialects* (Leeds: E.J. Arnold & Son, for the University of Leeds), *Introduction* (1962), by Harold Orton; *The basic material*, Vol. 1, *The six northern countries and the Isle of Man*, ed. by Harold Orton and Wilfrid J. Halliday, Part 1 (1962), Parts 2 and 3 (1963); Vol. 4, *The southern counties*, ed. by Harold Orton and Martyn F. Wakelin, Parts 1–3 (1967).

These publications do not yet constitute a linguistic atlas. They are quite literally only 'basic materials': printed versions of the fieldworkers' transcriptions at the 75 points in *The six northern counties and the Isle of Man* and again at the 75 points in *The southern counties*. Yet in a strangely disconnected way, a corresponding linguistic atlas is being published, of which thus far one volume has appeared: Eduard Kolb (Professor of English at Basel, and in a sense Dieth's successor), *Phonological atlas of the northern region: The six northern counties, north Lincolnshire and the Isle of Man* (Bern: Francke, 1966; = Linguistic Atlas of England), 390 pp., 243 maps. The type of presentation is similar to that in the *Sprachatlas der deutschen Schweiz*. Symbols are entered on each map at the points investigated, with their meanings explained in an accompanying legend. Here again this method of presentation is highly effective: the reader immediately perceives something of the geographical structure of speech.

In sharp contrast to the *Survey of English dialects* — and to all previous dialect-geographical studies — the *Linguistic survey of Scotland* promises to be highly innovative. Special emphasis will apparently be placed on detailed phonological analyses of the speech at each point under investigation. This was at least the intent a decade and a half ago. Cf. Angus McIntosh, *An introduction to a survey of Scottish dialects* (Edinburgh: Nelson, 1952; = University of Edinburgh, Linguistic Survey of Scotland Monographs, 1); J.C. Catford, "The Linguistic Survey of Scotland", *Orbis* 6.105–21 (1957); J.C. Catford, "Vowel-systems of Scots dialects", *TPhS* 1957.107–17.

The Scandinavian Languages

An outstanding Scandinavian contribution to geographical linguistics is Johannes

Brøndum-Nielsen, *Dialekter og dialektforskning* (Copenhagen: Schultz, 1927), in which a survey of the most important European atlases is combined with information on Scandinavian dialects. This work includes 19 maps of Danish dialect features based on the atlas of Valdemar Bennike and Marius Kristensen, *Kort over de danske folkemaal med forklaringar* (Copenhagen 1898–1912). Though this latter still remains the most comprehensive collection of Scandinavian dialect maps, dialectologists have recently been very active both in the collection of dialect materials and in the publication of individual monographs, the latter often accompanied by maps. In addition, a regional atlas of southern Sweden and an atlas of Norway are in preparation.

A striking aspect of geographical linguistics in Scandinavia is the large number of centers devoted to dialect (and related) research. In Denmark there is an *Udvalg for Folkemaal* (Dialect Commission) at Copenhagen, and an *Institut for jysk Sprog- og Kulturforskning* at Århus. In Norway there is a *Norsk Målførearkiv* (Institute for Dialect Research) at Oslo, and an *Institut for Nordisk Filologi* at Bergen. In Sweden there is a *Dialekt- och folksminnesarkiv* at Uppsala, an *Institut för ortnamns- och dialektforskning* at Göteborg, a *Landsmålsarkiv* at Lund, a *Stiftelse för folkmåls- och folkminnesundersökningen i övre Norrland* at Umeå; and, for the Swedish-speaking area of Finland, a *Folkmålsarkiv* at Helsinki. Each of these centers is engaged, among other things, in gathering dialect materials; and in Sweden in particular an enormous amount of such material has been collected.

The regional atlas referred to above is Sven Benson, *Südschwedischer Sprachatlas* (Lund: Gleerup, 1965ff.; = Skrifter utgivna genom Landsmålsarkivet i Lund). By 1969 three volumes had appeared, with a total of 53 maps plus commentary for each. The method of presentation is similar to that in the Netherlandic atlas: a symbol at each point covered, plus a legend explaining the symbols. Benson did not use any special questionnaire for the atlas, or do any fieldwork of his own, but made use of the vast files (over 3,000,000 slips) that have been accumulating at the Landsmålsarkiv in Lund since its establishment in 1930. Much of this material was recorded by academically trained assistants in informal interviews with dialect speakers; some of it was obtained by the indirect method of sending out questionnaires to dialect speakers; and some is taken from words, expressions, and longer texts which dialect speakers wrote down from memory. The material underlying the atlas is therefore very heterogeneous in nature, and much of it must be carefully edited before use.

Mention should be made of two Swedish works earlier than Benson's which are also in effect regional atlases. One is J. Götlind and S. Landtmanson, *Västergötlands folkmål* (Uppsala: Lundequist, 4 vols., 1940–50), with a total of 128 maps on phonology and inflection. The second is Natan Lindqvist, *Sydväst-Sverige i språkgeografisk belysning* (Lund: Carl Blom, 2 vols., 1947; = Skrifter utgivna genom Landsmålsarkivet i Lund, 2), with 125 maps on word geography.

The Norwegian linguistic atlas now in preparation has been described in Ingeborg Hoff, "Historisch-phonematische Mundartkarten" (with five sample maps and commentary), *Verhandlungen des Zweiten Internationalen Dialektologenkongresses* (Wies-

baden: Franz Steiner, 1967; = *ZMaF*, Beihefte, Neue Folge, Nr. 3), 1.373–87. Its aim is to present phonemic maps that will illustrate the historical development of vowels and consonants in the Norwegian dialects. The materials for the atlas are taken from the dialect collections of the Norsk Målførearkiv in Oslo and the Institut for Nordisk Filologi in Bergen; they were apparently gathered over the years in much the same way as those of Benson's atlas.

Faroese dialects still await an extensive survey. Icelandic, which shows few dialect variations, has been intensively surveyed for phonological deviations by Björn Guðfinnsson in *Mállýzkur* (Reykjavik 1946–64). The theoretical problems of Icelandic dialectology have been discussed in Hreinn Benediktsson, "Icelandic dialectology: Methods and results" (*ÍT* 3.72–113, 1961–62).

Celtic

A work written very much in the spirit of the *ALF* is Pierre Le Roux, *Atlas linguistique de la Basse-Bretagne* (Rennes: J. Plihon, and Paris: E. Droz [later H. Champion], 1924–53), consisting of five fascicles of 100 maps each. Fieldwork was done during 1911–13 and 1919–20 at 77 localities, using a questionnaire of some 1200 items. An investigation now underway is Heinrich Wagner, *Linguistic atlas and survey of Irish dialects* (Dublin: Dublin Institute for Advanced Studies), Vol. 1 (1958), *Introduction*, pp. xviii, 300; Vol. 2 (1964), *The dialects of Munster*, pp. xix, 306. (These two items are listed merely as examples of Celtic linguistic geography. Though I have examined both works, I am not competent to judge them.) To these two Celtic items should be added the fact that, in connection with the Linguistic Survey of Scotland, there are plans for a linguistic atlas of Gaelic under the direction of K. H. Jackson.

III. FUTURE DIRECTIONS

As we have seen in the preceding section, work in geographical linguistics during the past several decades has represented essentially a continuation of the trends set toward the end of the 19th century. Though there have been numerous refinements in technique, there have been no striking changes in theory and basic outlook. During very recent years, however, there have appeared signs that some rather fundamental changes are in the process of development. Whether these will become firmly enough established to constitute genuine 'trends' we cannot yet know. We shall refer to them as 'future directions' — without necessarily implying that these directions will actually be taken.

Phonological Theory

Geographical linguistics was born and came of age during the heyday of phonetics.

As a result, the primary task of the atlas fieldworker was seen as that of recording in as full phonetic detail as possible the responses of his informants. For some three-quarters of a century this view has gone essentially unchallenged. As recently as 1951, for example, we read: 'Je dis à mes élèves: "En phonétique, vous êtes des machines: enregistrez ce que vous entendez; les particularités individuelles ne sauraient en aucun cas êtres suspectes: ce sont tout au plus des faits de parole, susceptibles un jour ou l'autre de devenir des faits de langue, étant socialisés."' (J. Séguy, *FM* 19.247 [1951], as quoted by Jonathan L. Butler, *RomPh.* 19.465 [1966].) Here the Saussurean distinction between PAROLE and LANGUE seems to be fully recognized; but importance seems to be attached only to parole. Hence the fieldworker need perform only as a recording machine.

Current linguistic theory suggests that, for all the importance of parole, langue is also important — perhaps even more so. Instrumental phonetics shows us that no two speakers ever pronounce the same word in exactly the same way; that, indeed, no single speaker ever pronounces the same word twice in exactly the same way. Yet behind these phonetic differences in parole there lies a structural sameness in langue; and this structural sameness surely needs to be captured and recorded and displayed in geographical linguistics. Let the fieldworkers behave like machines and record as much of parole as they can. (We need not worry about their human fallibilities. We now have much better machines, namely tape recorders. See below.) But let them also behave like human beings, and handle language as its speakers do — in terms of langue. It is common knowledge that no two fieldworkers, no matter how well trained, can transcribe any utterance of some length PHONETICALLY in the same way. Yet with only moderate training they can easily learn to transcribe the same utterance STRUCTURALLY in the same way. This structural sameness needs to be made a part of the data of geographical linguistics, along with as many phonetic differences as the fieldworkers can record.

A linguistic atlas, under this view, should continue to provide us (as in the past) with as much phonetic information as possible. In addition, it should also provide us with enough structural information so that we can know which phonetic differences are linguistically relevant and which are not. Thus far no linguistic atlas has been designed with this aim in view. (A probable exception to this statement is the promised atlas of the Linguistic Survey of Scotland; but as yet none of this has appeared.) On the other hand, all monographs on individual localities have always been written more or less from a structural point of view, whether the writer realized it or not. This is inevitable. As soon as an investigator comes to know a local dialect really well, he perceives it as its speakers do — structurally, in terms of phonemes. In perhaps most cases this structural presentation has been made intuitively, quite outside of awareness and not burdened by linguistic theory. In a few cases the presentation has been made in full awareness of linguistic theory. Two outstanding examples (among many) are: Poul Andersen, *Fonemsystemet i Østfynsk*, på Grundlag af Dialekten i Revninge Sogn (Copenhagen: Schultz, 1958; = Udvalg for Folkemaals Publikationer, Series A,

No. 14); and Marthe Philipp, *Le système phonologique du parler de Blaesheim*: Étude synchronique et diachronique (Nancy 1965; = Annales de l'Est, publiées par la Faculté des lettres de l'Université de Nancy, Mémoire no. 27).

Though we have as yet no structurally designed atlases, the idea of applying structural methods to geographical linguistics has become a clear 'future direction'. This was of course anticipated many years ago by N. S. Trubetzkoy in his "Phonologie und Sprachgeographie", *TCLP* 4.228–34 (1931). The first recent programmatic discussion was by the late Uriel Weinreich in his "Is a structural dialectology possible?", *Word* 10.388–400 (1954). With all due credit to Weinreich, however, the notion of applying structuralism to dialect studies was already 'in the air'. Cf. three further programmatic articles by Jean Fourquet: "Linguistique structurale et dialectologie", *Fragen und Forschungen im Bereich und Umkreis der germanischen Philologie, Festgabe für Theodor Frings* (Berlin: Akademie-Verlag, 1956), 190–203; "Phonologie et dialectologie", *Bulletin de la Faculté des Lettres de Strasbourg* 35.293–301 (1956–57); "Phonologie und Dialektologie", *ZMaF* 26.161–73 (1958).

During the past decade a number of articles applying structuralism to geographical linguistics have appeared. The following is only a small selection: Sven Benson, "Fonetisk och fonematisk kartläggning", *Studier i Nordisk Språkvetenskap* (Lund 1958; = Lundastudier in Nordisk Språkvetenskap, 14), 154–65; K. Heeroma, "De Oostnederlandse Langevocalensystemen", in K. Heeroma and K. Fokkema, *Structuurgeografie*, *BMDial* 23.1–15 (1961); Jean Séguy, "Essai de cartographie phonologique appliquée à l'Atlas linguistique de la Gascogne", in *Actes du Xe Congrès international de linguistique et philologie romanes*, Strasbourg, 23–28 avril 1962 (Paris 1965), 1029–50, with 8 maps; K. Heeroma, "Structuurgeografie en structuurhistorie", *TsNTL* 79.165–82 (1963); Rudolf Grosse, "Isoglossen und Isophonen: Zur Problematik der phonetischen, phonologischen und phonometrischen Grenzlinien", *PBB(H)* 87.295–317 (1965). Perhaps the most extensive number of studies of this sort are those of William G. Moulton, based on the materials of the *Sprachatlas der deutschen Schweiz*, e.g. "The short vowel systems of northern Switzerland", *Word* 16.155–82 (1960); "Lautwandel durch innere Kausalität: die ostschweizerische Vokalspaltung", *ZMaF* 28.227–51 (1961); etc. Further bibliography is given in his "Structural dialectology", *Language* 44.451–66 (1968).

Synchrony and Diachrony

Geographical linguistics was born and came of age also during the heyday of historical-comparative linguistics, and the historical approach has continued to dominate it. For many — perhaps most — scholars in the field, geographical linguistics and history are inseparable. "La Geografía lingüística es historia". (A. Griera, *Interpretación de mapas de los atlas lingüísticos románicos* [1968], p. 7.) In part this assumed connection between the two is justified and desirable, precisely because geographical linguistics

has added so much to our knowledge of historical linguistics. Yet there is no NECESSARY reason why all of geographical linguistics must be historical. Now that we have the methods of structural phonology and, very recently, of generative grammar, it is possible to produce purely synchronic studies of great interest and value. Here is another possible 'future direction'. In his 1954 article Weinreich suggested various types of purely synchronic studies using a structural approach. Mario D. Salterelli has suggested ways of applying generative grammar in "Romance dialectology and generative grammar", *Orbis* 15.51–9 (1966). And Alan R. Thomas has applied generative theory to Welsh dialects in "Generative phonology in dialectology", *TPhS* 1967.179–203.

The suggestion that structural and generative methods can be used in geographical linguistics is sometimes misinterpreted as implying that those who make such suggestions wish to ignore both phonetics and history. But this need not be true at all. Phonological studies, whether of the structural or generative variety, inevitably involve phonetics; and synchronic studies may produce new methods which can be used to enrich historical studies. Local dialects, in their great diversity, represent a wonderful linguistic laboratory which can and should be used by linguists of all persuasions, for studies with many different theoretical approaches.

Sociolinguistics

In the past, linguistic geography has concentrated very heavily on one age group in one social class: the oldest generation in rural, especially agricultural, areas. It has been widely assumed that only in this way could one record 'true dialect'. This emphasis has given to much of geographical linguistics a distinctly agricultural and antiquarian flavor. In part this approach has also been justified. There is a very real sense in which the speech of elderly farmers represents something 'old', something that deserves our attention and should be recorded before it disappears forever. In part, however, this belief in the fragility of dialects has probably been exaggerated. It has often been observed that people who learn 'pure' dialect as children tend to abandon it when they become young adults; yet when such people reach their fifties, sixties, and seventies, they seem to return to the 'pure' dialect of their childhood and are then regarded as ideal informants. (This return to childhood patterns of speech is a fascinating phenomenon which, as far as I know, has never been investigated.) Dialects are apparently much tougher than has generally been thought. For a good century scholars have been lamenting the fact that dialects were about to die out. Yet they are still with us.

If I read the signs correctly, there is a clear 'future direction' which considers any and all varieties of language to be worthy objects of study. There are 'variables' of human language along at least three different dimensions (aside from that of style): the geographical dimension, which has been the traditional concern of geographical

linguistics; the chronological dimension, which deals with the differences among generations (the young, the middle aged, the old); and the sociological dimension, which deals with the differences among social classes (lower class, middle class, upper class; rural vs. urban; etc.). It would be wrong to imply that such matters were always neglected in the past; but I believe it is correct to say that they were never at the center of attention. It now seems likely that more and more attention will be paid to them. In particular, it seems likely that the speech of urban centers will come more and more to be studied.

As two (out of many) signs which point in this direction, let me mention the following. In "Étude des variations sociales et géographiques des faits linguistiques (Observations faites à Paris en 1956–57)", *Word* 16.55–95 (1960), Ruth Reichstein studied the oppositions *á/à*, *ɛ/ɛ̄*, *ɛ̃/æ̃* in the speech of 556 girls at 25 schools in Paris. She found extremely interesting correlations between language and economic status. In *Mundartwandel im 20. Jahrhundert* (Frauenfeld: Huber, 1967; = Beiträge zur schweizerdeutschen Mundartforschung, 14), Heinz Wolfensberger studied the speech of Stäfa (some 20 kilometers southeast of the metropolis of Zurich), a town whose population has doubled during the past two decades. He chose 72 informants according to three categories of age (old, middle, and young generations) and three categories of 'nativeness' (both parents born in Stäfa, one or both parents born elsewhere, informant born elsewhere), thus giving a 3×3 matrix of 9 types, with 8 informants for each type. He then identified certain variables in the speech of Stäfa and found very interesting correlations between these and the nine types of informants. Studies of this sort clearly constitute a 'future direction'.

Presentation of Data

We may recall that the maps of the *DSA* and the *ALF* were very different from one another. In the case of the *DSA*, the nature of the material dictated the manner of presentation. Because each map had to include data from over 40,000 localities, it would have been impossible to enter 40,000 readable symbols on each map — much less 40,000 phonetic transcriptions. Hence the editors were forced to draw generalized isoglosses, and to enter symbols only for deviant forms. Except where coverage was essentially 100%, however, editors of linguistic atlases have in general avoided the use of isoglosses, or of colored surfaces, or of shading, and the like. The reason is clear: this type of 'closed map' implies that a given form is used throughout an entire area; and this is justified only if every locality in this entire area has actually been investigated. (Even in this case, 'closed maps' can lead to absurdities — such as drawing an isogloss through the Alps and thus implying that the glaciers on one side speak differently from the glaciers on the other side.) Instead, they have preferred the 'open map', where an entry is made only at each point actually investigated. (Such maps are 'open' in the sense that one can always add to them, as more data become avail-

able.) The reader then knows exactly which points have been investigated, and no implications are made about areas which have NOT been investigated.

When an 'open map' is used, the editor has (in principle) two choices. He may either enter at each point the raw data (phonetic transcriptions); or he may enter arbitrary symbols, which are then explained in an accompanying legend. Often the nature of the material again dictates the choice between these two alternatives. If coverage is so dense that there is no room on the map for many hundreds of phonetic transcriptions, then arbitrary symbols must of necessity be used. This is the case, for example, with the atlases for German-speaking Switzerland, for the Walloon area of Belgium, for the Netherlandic *Taalatlas*, and for the atlases of England, southern Sweden, and Norway.

But what of the case (as for example in the *ALF*) where the editor DOES have a choice? Should he then enter at each point investigated the raw data (the fieldworker's actual phonetic transcription); or should he enter an arbitrary symbol which is explained in an accompanying legend — even at the risk of slightly obscuring the raw data? The reader surely knows by now my personal prejudice in regard to this question: that only the use of arbitrary symbols reveals immediately something of the geographical structure of language. Except for passionate dialectologists, few persons have the patience and enthusiasm to puzzle their way through a maze of phonetic transcriptions (such as those of the *ALF* and of many more recent atlases). Yet if the ordinary reader does NOT grasp something of the geographical structure of language, then the whole purpose of geographical linguistics is defeated. We noted above that the *DSA* (with all its obvious faults) led to the development of an active 'atlas school' of linguistic research; whereas the *ALF* (with all its theoretical superiority) was met by massive indifference. One cannot help wondering to what extent this was a result of the two very different types of presentation of data: easily readable maps in the case of the *DSA*, a maze of phonetic transcriptions in the case of the *ALF*.

There is, however, still a third alternative. The raw data (phonetic transcriptions) can be presented in tabular form, as in the Gauchat-Jeanjaquet-Tappolet *Tableaux phonétiques*; and a selection of these data can then be presented in map form, using arbitrary symbols. This — with one important exception — is the procedure being followed in the Orton *Survey of English dialects* and the Kolb *Linguistic atlas of England*. The exception is the fact that Orton presents the raw data for a single question run on in lines rather than vertically in columns, as in the *Tableaux phonétiques*. This makes it difficult to compare the replies to one question with those to other questions at a single point or series of points.

Is there any 'future direction' that can be perceived in this welter of conflicting types of presentation? Perhaps we can find it in Hotzenköcherle's *Sprachatlas der deutschen Schweiz*. Here, in uncomplicated cases, we are presented with maps that use arbitrary symbols for the vowels and consonants of the raw data, plus phonetic transcriptions for critical points. Where the cases are more complicated, we are shown both a map with arbitrary symbols and a complete list of the raw data for each point investigated.

Tape Recordings

Thus far I have made no mention of the mechanical recording of dialect speech. I have taken it for granted that, as the technical facilities for recording speech mechanically are gradually improved, they will be used by geographical linguists. By and large this has been the case — though often with a considerable cultural lag. Starting in the early years of this century, various *Phonogrammarchive* and the like were established; and today (one hopes) there is no dialect research that is not accompanied by extensive tape recordings. The great advantage of the modern tape recorder is that we need no longer say to our fieldworkers: 'Vous êtes des machines.' We now have much better machines; and fieldworkers can be used for better purposes, namely those of analyzing language in terms of langue rather than of parole.

A new and interesting use of tape recordings has been made in Germany in the series *Lautbibliothek der deutschen Mundarten* (Göttingen: Vandenhoeck & Ruprecht, 1958ff.), under the direction of Eberhard Zwirner. Huge numbers of unstructured tape recordings of dialect speech (as well as of local varieties of standard German) were made during the 1950s. Such a procedure at first glance seems useless, since it violates one of the cardinal principles of geographical linguistics: that approximately the same material must be gathered at each point under investigation, by means of a questionnaire that has been carefully prepared beforehand. If this is not done, there is no assurance that the material gathered at any one point can be compared with that gathered at any other point. Though this problem cannot be overcome in the *Lautbibliothek der deutschen Mundarten*, an ingenious solution has nevertheless been found. The recordings for a particular locality have been given to a dialect expert (where possible, someone already familiar with the speech of the locality), and he has been asked to process the materials for publication. He then produces a text in three different versions: a relatively narrow phonetic transcription, a broad and more or less phonemic transcription, and a standard German translation. The result is a very useful collection of dialect texts, even though they fall far short of the value of a genuine linguistic atlas.

AUTHOR'S POSTSCRIPT

When the editor of this series asked me to write this essay on current trends in geographical linguistics, I agreed to do so only because of the untimely death of the scholar who had originally accepted this assignment, and because it was clear that this volume would be incomplete if it did NOT contain a section on geographical linguistics. Yet I was reluctant to accept. I have had to complete my assignment in far more haste than I would have wished; and I have had to write much of it without being able to consult proper library facilities.

The reader should be warned of my areas of competence and incompetence. I know nothing of Celtic, and next to nothing of Portuguese-Spanish-Catalan and the Scandinavian languages. I have some familiarity with Italian, somewhat more with French, still more with English (though more in the United States than in Great Britain). I feel truly competent only

in the Netherlandic-German area, after many years of working with German dialect materials, a year of research in Holland (where the late G. G. Kloeke was my friend and teacher), and two years of research in Switzerland (where Rudolf Hotzenköcherle offered me both friendship and great wisdom).

In writing this essay, I have made use of the customary biliographical reference works. But I could not have accomplished my task if I had not been able to consult the following works:

Sever Pop, *La Dialectologie: Aperçu historique et méthodes d'enquêtes linguistiques*, Part 1, *Dialectologie romane*; Part 2, *Dialectologie non romane* (Louvain: chez l'auteur, and Gembloux: J. Duculot, [1950]; = Université de Louvain, Recueil de travaux d'histoire et de philologie, 3e série, nos. 38 & 39), pp. lv, 1–733, 734–1334. This is an exhaustive and invaluable survey of geographical linguistics up to about 1950, even though Pop was interested more in techniques than in theory, and more in Romance languages than in others.

Iorgu Iordan, *Einführung in die Geschichte und Methoden der romanischen Sprachwissenschaft*, ins Deutsche übertragen, ergänzt und teilweise neubearbeitet von Werner Bahner (Berlin: Akademie-Verlag, 1962), pp. ix, 521; and Iorgu Iordan, *Lingüística románica*, reelaboración parcial y notas de Manuel Alvar (Madrid: Ediciones Alcalá, 1967; = Colección Romania, serie lingüística), pp. xxii, 755. Iordan's Chapter 3, on geographical linguistics, was of great help.

Ludwig Erich Schmitt, ed., *Germanische Dialektologie*, Festschrift für Walther Mitzka zum 80. Geburtstag (Wiesbaden: Franz Steiner, 1968; = *ZMaF*, Beihefte, Neue Folge, nos. 5 & 6), Vol. 1, pp. [vii], 1–317; Vol. 2, pp. 318–609. This is a detailed description of geographical linguistics in the Germanic languages, written by experts in the field.

Though there are many admirable discussions of geographical linguistics in the languages of Western Europe — including surely some that I do not know — the following are so outstanding that I feel I must mention them:

Adolf Bach, *Deutsche Mundartforschung*, Ihre Wege, Ergebnisse und Aufgaben, 2nd ed. (Heidelberg: Winter, 1950), p. xv, 335, 58 maps.

V. M. Schirmunski, *Deutsche Mundartkunde*, Vergleichende Laut- und Formenlehre der deutschen Mundarten, aus dem Russischen [of 1956] übersetzt und wissenschaftlich bearbeitet von Wolfgang Fleischer (Berlin: Akademie-Verlag, 1962), pp. xvi, 662, 20 maps.

A. Weijnen, *Nederlandse dialectkunde*, 2nd ed. (Assen: Van Gorcum, 1966; = Taalkundige Bijdragen van Noord en Zuid, 10), pp. 504.

Johannes Brøndum-Nielsen, *Dialekter og dialektforskning* (Copenhagen: Schultz, 1927), pp. ix, 128, 28 maps.

In writing this essay I have confined myself to works which belong strictly to the field of geographical linguistics. With much regret I have excluded the many great dialect dictionaries that are now being compiled, and that often contain much information of interest to the geographical linguist. To include them, however, would have meant writing a whole new essay.

Among dialectologists there is — for reasons which I am not able to explain (perhaps because we all deal constantly with people?) — a special kind of human warmth and openheartedness. As I hurriedly wrote this essay, I was reminded again and again of the many fellow-dialectologists whom I have come to know over the years and who have been kind to me. In Italy: Giuliano Bonfante. In France: Jean Fourquet, Ernest Beyer, Marthe Philipp. In Germany: Walther Mitzka, Ludwig Erich Schmitt, Eberhard Zwirner, Rudolf Grosse and many, many others. In Austria: Eberhard Kranzmayer and again many others. In Switzerland: the late Walter Henzen, Paul Zinsli, Konrad Lobeck, Rudolf Trüb, Robert Schläpfer, and the incomparable Rudolf Hotzenköcherle. In Holland and Belgium: the late G. G. Kloeke, Edgard Blanquaert, Sever Pop, and Willem Pée, P. J. Meertens, Jo Daan,

Antoon Weijnen, Klaas Heeroma, Jan Goossens, J.L. Pauwels. In England: Harold Orton and (England and Switzerland) the late Eugen Dieth. In Denmark: Poul Andersen, Kristian Ringgard. In Sweden: Sven Benson, Karl-Hampus Dahlstedt. My thanks to all of them.

August 1969 W.G.M.

The above essay, including the author's postscript, was completed during the summer of 1969. As now, two and a half years later, I read final proof for the printer, I note one serious omission: an important addition to the series *Nouvel Atlas linguistique de la France par régions*, namely Henri Bourcelot, *Atlas linguistique et ethnographique de la Champagne et de la Brie* (Paris: Editions du Centre national de la recherche scientifique, 1966ff.). Such omissions in so comprehensive an essay are perhaps inevitable — though I hope that there are not many others.

I must also note that another work in this same series, mentioned above as not yet published, has now begun to appear: Ernest Beyer and Raymond Matzen, *Atlas linguistique et ethnographique de l'Alsace* (Paris: Editions du centre national de la recherche scientifique, 1969ff.). At the same time, it is my sad duty to report the death of Ernest Beyer, who was the chief fieldworker and editor of this atlas.

Perhaps the most noteworthy development of the intervening two and a half years has been the growth of interest in structural dialectology. At least three important works deserve mention: Jan Goosens, *Strukturelle Sprachgeographie: Eine Einführung in Methodik und Ergebnisse* (Heidelberg: Winter, 1969); Peter Wiesinger, *Phonetisch-phonologische Untersuchungen zur Vokalentwicklung in den deutschen Dialekten* (2 vols., Berlin: Walter de Gruyter, 1970; = Studia Linguistica Germanica, ed. by Ludwig Erich Schmitt and Stefan Sonderegger, 2/1 and 2/2); and Baldur Panzer and Wolf Thümmel, *Die Einteilung der niederdeutschen Mundarten auf Grund der strukturellen Entwicklung des Vokalismus* (Munich: Max Hueber Verlag, 1971; = Linguistische Reihe, ed. by Klaus Baumgärtner, Peter von Polenz, and Hugo Steger, 7). Structural dialectology (in which I like to think that I played a pioneering role) is now clearly more than a 'future direction'; it has become a 'current trend'.

January 1972 W.G.M.

DESCRIPTIVE LINGUISTICS

BERTIL MALMBERG

At the outbreak of the First World War European linguistic research was still under the domination of the Neogrammarian tradition. Consequently there was not much space left for purely descriptive linguistics, generally looked upon as non-scientific. The leading authorities did not realize its necessity. The new signals from a few famous forerunners such as Otto Jespersen in Denmark, Adolf Noreen in Sweden, Anton Marty in Switzerland, E. Kruisinga in the Netherlands did not bring about any essential modification of this general situation. The Swede Axel Kock had already in a work from 1896 (*Om språkets förändring* 'Concerning language change') questioned the exceptionlessness of sound laws in its orthodox neogrammarian formulation. Hugo Schuchardt and G. Curtius had expressed similar reservations. And Otto Jespersen had, like these scholars, pointed to the importance of frequency and style for differences and anomalies in sound changes. Nobody had, however, been quite successful in creating a real debate about the mechanistic dogma once formulated by the Junggrammatiker group in the famous Leipzig centre of the late seventies and early eighties of last century.[1]

Indo-European comparatism was firmly consolidated at that time and it acquired through the discoveries of new branches on the so-called family tree, and thanks to deeper analyses of the language families already known, an increasingly solid basis for its further development (Meillet, Brugmann, Hirt). The model was applied to the different branches such as Romance (W. Meyer-Lübke, G. Gröber) and Germanic (H. Paul) and has been applied, on a more modern basis, by scholars like Stroh for Germanic (1952), Iordan for Romance (1962)[2], and for other language families. In fact, the idea that any explanation had to be a diachronic one stuck and is not yet fully abandoned everywhere. For a historicism and evolutionism which was intimately tied up with the Romantic trend of the past century, ORIGIN had remained identical with EXPLANATION. If English has sing. *man*, plur. *men*, this is BECAUSE Old Germanic had a palatal in the plural ending in that case, etc. The linguistic structure was described by

[1] Saussure had spent two years (1876–77 and 1877–78) in this world capital of the then young linguistics. Noreen had been there more or less at the same time (1879). Saussure must have known some of Noreen's works when he gave his courses in Geneva a few decades later. About Noreen's *Vårt språk* ('Our language'; I-IV, VII, X, 1903–23), see John Lotz (1954).

[2] An earlier English version of the same book was published in 1937 by John Orr.

references to earlier stages of the same language (to Latin for Romance), or to some faintly known or reconstructed 'mother language' (Proto-Germanic, Proto-Slavic, etc.). Descriptions of current dialects were worked out with some previous stage as a point of departure. A vowel in a given dialect was not defined by its relations to the other vowels of the same system but according to what it had developed from. University handbooks were worked out in the same way. A handbook of, say, classical Icelandic was not a presentation of the system of that language at the time of the sagas, but a survey of its sounds (read 'phonemes') and forms as reflexes of reconstructed Proto-Germanic or Indo-European elements.

If this tradition made itself more strongly felt in Europe than, above all, in the USA and consequently the synchronic description was more generally neglected, this is of course due to the fact that Indo-European comparative and diachronic linguistics had been built on well known linguistic material, i.e. on languages of which a generally accepted description already existed in the form of up-to-date authoritative grammars, dictionaries, etc. In the USA, on the contrary, the confrontation with the numerous native languages and cultures had put the theory and technique of synchronic description into focus at a very early date. It is a striking fact that, when grammarians tried to pass beyond an elementary normative description of a language, they did so by dragging in peripheral material, archaisms, social and regional variations, rare forms and constructions, literary and stylistic phenomena, etc., not by inventing more economical or more elegant descriptive solutions. G. O. Curme's famous *Grammar of the German language* (1905 and following editions) is an example of this kind of quasi-scientific description. Jespersen's *A modern English grammar* (1909–49) balanced on a borderline between synchrony and diachrony and illustrated — on a very high level — an approach whose principles were to be formulated much later by W. von Wartburg (1931)[3].

On the other hand, the historical and comparative tradition was continued in all countries of Western Europe during the following period. It could not, however, escape from being influenced by the new ideas coming up, while, at the same time, it exerted an important influence on the developing synchronic description. We want to mention in this context certain French and Italian linguists who may be said to represent these tendencies. In Italy there were between the two wars two such scholars as Benvenuto Terracini (1940–41, 1949) and Giacomo Devoto (1944, 1953, the *Fondamenti* of which *Los fundamentos de la historia lingüística* is a Spanish version, 1955), in France, Émile Benveniste, whose comparatism, doubled with a very personal structural approach, is summed up in his recent article "Le langage et l'expérience humaine" (1966; his views on the linguistic sign should also be mentioned here, in connexion with what will be treated below, e.g. "Nature du signe linguistique", 1939). The Swiss anglicist Wilhelm Horn, whose comprehensive survey of English sound

[3] I have myself made critical comments on these later principles in one of my early works, *Système et méthode* (chap. 'Synchronie et diachronie'), 1945.

changes (1954) from a structural point of view is another example of mutually penetrating methods, should also be mentioned here.

The period which will interest us in the following survey is essentially the one which goes from the end of the first Great War up till the present time, i.e. roughly speaking the last fifty years of European linguistics.[4] It seems natural to start such a survey by pointing out the extreme importance of Ferdinand de Saussure's *Cours de linguistique générale*[5] (1916) for the foundation of a descriptive, synchronic science of language on our continent. It was published three years after the author's death and became known to the international scientific public during the following years or, anyhow, during the early twenties. The choice of Saussure's work as a point of departure for a presentation of European descriptive linguistics during this period is far from being a simple question of chronology. It is strongly motivated, even completely unavoidable. Among the principles for linguistic research formulated in the *Cours*, I want to point out two which seem to me more basic and richer in consequences than the others (as for instance the synchrony/diachrony dichotomy, or the linearity of the linguistic sign). I am thinking of the thesis that language is FORM (not HAS form, as was often stated e.g. by American structuralists) and that the linguistic sign is ARBITRARY. These two theses, differently developed, may be said to have given rise to two European schools of linguistics and to the modes of linguistic thinking which they represent. Both have played a decisive part in the history of modern descriptive linguistics. I am referring to the PRAGUE SCHOOL on the one hand, to GLOSSEMATICS on the other. Their common origin is indisputable in spite of the fact that these two schools are fundamentally different from each other as far as the basic starting point and the underlying theoretical principles are concerned. Their application to concrete material, however, has most often given similar results.

It is in fact possible to find in the *Cours* the general basis for even another direction of linguistic analysis in Europe. When Saussure defined SEMIOTICS (semiology) as a science which studies the functioning of signs within the social structure, and characterized language as one of several sign systems — the most important but not the only one — he must have had in mind an orientation of linguistic research which was to play an important part in European linguistics only a few decades later, the sociological one (much later than the corresponding directions in the USA where the contact with native cultures has made this aspect of language strongly felt almost from the beginning). Saussure's pupil, later the altmeister of European comparatism, Antoine Meillet, followed up this line of thinking in his famous surveys of the development of the great classical languages. A more strictly structural approach to these themes first came up in France, in the guise of a new, structurally formed sociology.

[4] More detailed information is given in my book *New trends in linguistics* (1964a; French version 1968a; Spanish version 1967). A more recent survey of the linguistic development during the last fifty years is given in my 1968b paper.

[5] English translation as late as 1959. The German translation had appeared already in 1931; the Spanish in 1946. For the recent Italian version, see below. A critical edition of the *Cours* (Saussure 1967a) is being published by Rudolf Engler (*Cours de linguistique générale; édition critique*, 1967–).

It is well known that Saussure's 'semiotics' was due to his contacts with the then new French sociology (Durkheim).[6] When, some 70 years later, linguistic and social sciences again discovered their common points in French science, it was in the form of an application of structural principles to anthropological material and thanks to Claude Lévi-Strauss' intimate contacts with structural linguistic thinking (due to his relations with Roman Jakobson). Lévi-Strauss has recently (1966) declared linguistics as the methodologically strictest and best developed of humanities. If this is so, it is to a large extent an effect of theoretical foundations which may be traced back to the *Cours*. It will be convenient to devote our attention here to the role of the two above mentioned schools in European descriptive linguistics (Prague linguistics and glossematics) during the period we are interested in. But before doing so, we shall first have to say a few words about what became of the Saussurean ideas in the Geneva centre itself.

The tradition of Saussure was first continued and developed by Charles Bally and Albert Sechehaye, in a direction, however, which implied certain modifications of the theories expounded in the *Cours* (Sechehaye 1940). Bally's great work *Linguistique générale et linguistique française* (2nd ed. 1944) is a structural and contrastive grammar where the author, starting from a functional, descriptive analysis of French, draws attention to the particularities of this language by a systematic comparison with German. In his chapter on 'Syntagmatique et transposition fonctionnelle' (§§179–96) he develops a transformation method which, in fact, has always been practised in Indo-European linguistics, and which was theoretically outlined by Sechehaye (1926) and by Henri Frei (1929). The latter had established (1942:18ff.) a distinction between 'transposition dirigée' and 'transposition libre'.[7] It was in principle this method, richly developed and illustrated in the passages quoted by Bally, which was to be rediscovered some thirty years later by Chomsky. (As far as I know, never a word has been said about this in the Chomskian literature.)

Henri Frei's name is primarily connected with the lucid, theoretical scrutiny of the Saussurean ideas which has taken place ever since within the Geneva group and with the far-going development of their implications which is characteristic of this scholar's scientific activity. His discussion of the 'linguistic sign' of both Saussure and Buyssens (1963) is an example of this. Frei has summarized some of his basic ideas (critiques of Bloomfield, of Hockett, of Chomsky, etc.) in *Syntaxe et méthode en linguistique synchronique* (1962). Frei stresses (against P. Guiraud, 1962) the linguist's ability to check his results.[8] His method of substitution leads him to replace the concept of CATEGORY of traditional grammar, inherited from Aristotelian philosophy, by that

[6] Saussure's dependency on the developing sociological science is discussed in more detail by Georges Mounin in his book *Ferdinand de Saussure ou le structuraliste sans le savoir* (1968).

[7] The first type is e.g. French *en condamnant un innocent = par la condamnation d'un innocent*, the second French *louer* (*un appartement* (1) *à un locataire*, and (2) *à un propriétaire*).

[8] He speaks of Guiraud's defeatist opinion according to which 'notre science, comme la métaphysique ou la morale, est une discipline sans vérifications ni sanctions' (p. 53).

of CLASS, based on verifiable operations (a counterpart of the experimental method in the natural sciences).

The most fundamental distinction in Saussure's system is the *langue/parole* dichotomy. It is not the place to analyse it here, nor to give any account of the numerous interpretations, modifications, and corrections which have been proposed (with more or less success) by later European scholars who, from different points of view, have found it fruitful to develop the idea behind it. Among the most important of these is Hjelmslev's "Langue et parole" (1943a)[9] and Coseriu's "Sistema, norma y habla" (1952). Even if the concept of 'langue' does not cover that of 'form' (and that of 'parole' not that of 'substance'), it is nevertheless as more or less synonymous with this later, fundamental distinction that the Saussurean terms have played their basic role in modern linguistics.[10]

The debate on synchrony/diachrony has continued in European linguistics. A very important contribution was given by E. Coseriu in his *Sincronía, diacronía e historia* (1958). It was touched upon by Marcel Cohen (1965), and it was the object of the present author's plenary lecture at the 10th International Congress of Linguists in Bucharest (in 1967).[11] It was also the main theme of the annual meeting of the Institut für deutsche Sprache in Mannheim (1968). The theoretical discussions have of course had consequences for the descriptive analysis of concrete linguistic material. There is no doubt that the dialectology of most countries has been strongly influenced on the one hand by the debates on descriptive technique and that interest has switched from historical reconstructions to the functional system as such, on the other that the sociological point of view is taken into account. Sever Pop's great work *La dialectologie* (1950) gave an all-round survey of the situation in that particular field (which will be taken care of by another contributor to this volume).

The ARBITRARINESS of the linguistic sign was the object of a long debate during the early thirties (see e.g. the articles by Benveniste 1939, Lerch 1939, Buyssens 1941, Pichon 1941, Naert 1947 and Spang-Hanssen 1954). We are not going to take it up here again, only recall a later stage in this discussion, partly due to Roman Jakobson. The expressive value of speech sounds had attracted his attention long ago in con-

[9] I also refer to my *Système et méthode* (1945; chap. 'Autour du problème langue — parole', pp. 6–21). In that paper I also discussed K. Rogger 1941.

[10] It seems as if Chomsky had never seen the fundamental distinction between FORM and SUBSTANCE, since he mixes them up all the time in his analysis. I really do not see to what extent his COMPETENCE and PERFORMANCE are meant to cover what Saussure and Hjelmslev called FORM and SUBSTANCE, or if they refer, in a more vague and imprecise way, to the wider Saussurean concepts *langue* and *parole*, particularly the former, which, in view of its general meaning, must refer to a series of qualities in the speaker, irrespective of whether they are tied up with the mastery of a functional system or with some, perhaps peripheral, realisation of irrelevant or redundant features.

[11] Published in Vol. I, 1969, pp. 13–36, of the *Proceedings* of the Congress. My main point was to question whether the purely temporal relationship between two layers of a language — which can be compared by means of well-known techniques — can be ascertained without the evidence of extra-linguistic facts (archeological, paleographic, historical, literary, etc.). Is not the relation established on mere linguistic facts just a hierarchic one? (which of course is in most cases a time relation but which might be e.g. stylistic or social).

nection with metrical analyses (Jakobson 1962:538–45). I took up the problem from a general point of view in my report to the Fifth International Congress of Phonetic Sciences in Prague (in 1967).[12] The content aspect of the problem — i.e. in principle the possible existence of conceptual systems independent of linguistic conventions — has acquired new timeliness in recent years in connexion with the analyses of special languages. It was discussed in the symposium organized under the auspices of the Council of Europe in Paris, November 1967 (see Malmberg 1968c). It will come up again in different fields of applied linguistics and in language teaching.

The concept of PHONEME in its structural sense — a minimal functional expression element — exists already in Saussure's famous *Mémoire* (from 1879), and in the purely abstract form of a unit which is not necessarily, but can be represented by a sound. The phoneme **A* in Indo-European is a purely formal unit. Not until half a century later was it to be interpreted in phonetic terms (by H. Hendriksen, in 1941) as the laryngeal of the Hittite language. The empirical discovery thus confirmed the formal calculus. The concept of phoneme is less clearly worked out in the *Cours*. If the abstract phoneme concept of the early *Mémoire* was to be the basis of Hjelmslev's empty expression unit, the so-called CENEME, it was as a given sound type with its distinctive (relevant) and its redundant (irrelevant) phonetic features that the concept was to be taken over and developed by the Prague phonologists. Since the contributions of the Prague school mostly fall within the domain of Eastern European linguistics and are treated in another volume of this series and since the purely phonetic-phonemic research is handled by another contributor to this volume, we shall have to limit ourselves here to a few brief remarks on the general influence of Prague linguistics on the descriptive technique applied in Western Europe during the period in question.

A number of linguists only loosely connected with the Geneva School have taken up and developed Saussure's theories. Among them is the German Leo Weisgerber, who has among other things discussed the *langue-parole* dichotomy and the theory of the sign. Weisgerber distinguishes between *Sprechen* (approx. = *parole*), *Sprachorganismus* (the system of linguistic signs) and *Kulturgut Sprache*, which roughly corresponds to Saussure's *langue* as a social phenomenon. Weisgerber attempts to show the absurdity of the objection often made against the structural and systematic view of language by traditional language scholars — that the actual utterances and not the system are what constitute the 'real' language. For Weisgerber the basic unit of language is the WORD, which he defines as 'the acquaintance with a sound symbol together with the knowledge of the corresponding concept',[13] in which symbol (= *Zeichen*) is equivalent to Saussure's *signifiant*. Weisgerber does not find Saussure's choice of the term *signe* appropriate for the combination of content and expression.

Weisgerber regards content analysis as the central task of linguistic description. He emphasizes that the signified, the concepts ('das Bezeichnete, die Begriffe') belong to

[12] In my paper "From F. de Saussure to Roman Jakobson" (1970).

[13] 'die Kenntnis eines lautlichen Zeichens zusammen mit dem Besitz des dazugehörigen Begriffs'.

the language and supports Saussure's thesis by comparing patterns of content in various languages and material from aphasic patients. Weisgerber has published his theories in a large number of comprehensive works (including 1941, 1950, 1951, and 1953–54).

A more direct development of Saussure's theories is to be found in the work of the German-Swiss linguist Hans Glinz, who has also taken over from Wilhelm von Humboldt and Anton Marty the term *innere Sprachform* ('inner linguistic form') to denote the content structure of a language (the grammatical and lexical system as opposed to the OUTER LINGUISTIC FORM, i.e. the sound structure and system of writing). Humboldt has used the term 'innere Sprachform' in contrast to 'äussere Lautform' ('outer sound form'). Glinz published his views on language in *Die innere Form des Deutschen* (1952), in the introduction to which he gives a review of Saussure's theories. He finds that the principle of the arbitrariness of the linguistic sign provides the best approach to an understanding of the structure of language.

Glinz considers that there are two fundamental elements in language: the SENTENCE and the WORD. Whereas the sentence can be delimited on an articulatory basis as a breath-group ('a linguistic pattern produced in one respiratory movement'),[14] the word, on the other hand, is exclusively a unit of content, the smallest meaningful unit or to be more precise the smallest interchangeable unit. Sounds are for Glinz not parts of the word but only its marks of identification with the function of keeping the various sound patterns distinct from each other. He considers that phonetics forms a secondary part of grammar, whose primary task is the description and interpretation of the interaction of significant units.

To some extent Glinz tries to blur the strict dichotomy of synchronic and diachronic analysis by pointing out that the development of a system is never completely finished, but is constantly affected by external factors. It is the striving TOWARDS a systematic structure rather than its realisation that is characteristic of language. Every language contains within itself at a given moment different layers of development and different systems.[15]

An attitude towards language that in many important respects resembles Saussure's is also to be found in the work of the English Egyptologist Sir Alan Gardiner. In his *Theory of speech and language* (1951) he takes as his starting point, like Saussure, the sociological nature of language and tries to give a sociological explanation of its origin and development. The origin of language cannot be envisaged, Gardiner maintains, except as the result of SOCIAL conditions. He considers LANGUAGE to be a

[14] 'in einem Zuge und unter einem Atem hervorgebrachte sprachliche Gebilde'.

[15] The same criticism was directed by the present author against certain solutions of phonological problems in French (Gougenheim, etc.; cp. below) in a few articles published in the early forties (e.g. 1940–41) and in his book *Le système consonantique du français moderne*, 1943. We are in fact faced with a situation where two systems (one richer, another poorer) exist at the same time, represented in different layers of the vocabulary, and realized under different stylistic conditions. I also drew attention to the mixture of systems in Italian (1942–43b). See also my contribution to the Ninth International Congress of Linguists (1964b).

prerequisite to SPEECH and in fact to be a collective term. The analysis of a language must nevertheless always begin with individual acts of speech. Language is only 'a name for established habits of speech'. The word is for Gardiner 'the unit of language', the SENTENCE, on the other hand, 'is the unit of speech'.

Gardiner also differs from Saussure in his definition of the linguistic sign and his analysis of content. He does in fact consider the meaning of a word to be something inseparable from it ('something inherent in it'), but at the same time, contrary to Saussure and his followers, he considers that the sign cannot be fully understood unless 'the thing-meant' (i.e. the content substance; cp. glossematics) is also taken into consideration. These 'things-meant' are formed independently of and prior to the linguistic meaning. Henning Spang-Hanssen points out that if like Gardiner, we accept the existence of these two separate planes of linguistic content ('thing-meant' and 'meaning') we are necessarily driven towards the metaphysical notion that there is a categorisation inherent in nature itself. It might, for instance, lead us to believe that the parts of speech, or word-classes, reflect a classification that already exists in nature, whereas a comparison of different language structures with completely different classifications would soon show that a natural system of linguistic categories based on 'reality' does not exist.[16]

The demand for the scientific description of languages made by Saussure and his followers seems to have influenced a number of attempts to describe various language types and stages of development. Saussure's principles and methods were not always stringently observed, however, and many of these attempts to describe the characteristics of a given language were little more than popular accounts without scientific value, but they did indicate a general change of attitude.

A theory of language that is independent of both European and American structuralism has been evolved by the English orientalist and phonetician J. R. Firth (died 1960) and his colleagues at the London School of Oriental and African Studies, who are sometimes referred to as the 'London School'. Firth's theories owe most to their author's experience with non-European languages. In analysing a language he makes a strict distinction between STRUCTURE (the relations found within the syntagma; cp. p. 45) and SYSTEM (the relations operating within the paradigm). Structure is therefore limited to categories extracted from word-forms and text-forms, while system is limited to 'a set or sets of paradigmatic relations between commutable units or terms which provide values for the elements of structure'. Firth was especially interested in prosodic phenomena. His most important statements of theory are to be found in "Sounds and prosodies" (1949), *Papers in linguistics* (1957a) and the article "A synopsis of a linguistic theory 1930–1953" (1957b). Firth's position can be regarded as a reaction against Bloomfield's behaviouristic view of language.

The French dialectologist and slavist Lucien Tesnière made an ambitious attempt to establish a universal structural syntax and tried out his methods on his native French.

[16] A view partly similar to Gardiner's can be found in Ogden and Richards' *The meaning of meaning*; cf. p. 125.

One of his aims was to use the data supplied by exact structural description in the improvement of language teaching methods. His theories are set out in *Éléments de syntaxe structurale* (1959), published posthumously, and are partly based on the same fundamental notion as Noam Chomsky's transformational grammar.

Another French linguist of definitely structural orientation, though without any direct connection with the schools treated here, is Gustave Guillaume whose analysis of language is characterised by a very subtle, strictly logical and abstract presentation of the hierarchy of linguistic functions. He is particularly interested in time and tense and in the 'spatialisation' of time categories. His fundamental works are *Temps et verbe* (1947) and "L'architectonique du temps dans les langues classiques" (1942–43).

There can be no doubt that the growing and widespread interest in the maintenance of LINGUISTIC STANDARDS and in questions of LINGUISTIC USAGE must be seen against the background of the change of attitude described above. When linguistics was primarily historical it was thought normal and inevitable that a language should change and that such changes were subject to a regularity which the speaker and writer had no power to affect and with which he ought not to meddle. Whereas before the 19th century linguistics had largely been concerned with establishing standards of correctness — rules for how one should write and speak, ways of improving the language by borrowing expressions or weeding them out — the historical approach of the 19th century tended to view such considerations with suspicion. The task of the linguist was to observe and describe phenomena and changes; he was expected to abstain from any evaluation and from all attempts to establish a norm.

The sociological view of language, which derives from Saussure, has radically changed the attitude of linguists in this respect. If language ceases to be regarded as an organism and is regarded instead as a means of contact and communication between people, it acquires a social function and can be evaluated according to the efficiency with which it carries out this function. Language has been created by man. It belongs to the community and, like other social habits, is governed by the norms that obtain in the community. No modern linguist would subscribe to the dictum 'usus tyrannus', if by linguistic usage is meant the mass of varying material that is actually found in all the different forms of spoken and written language that we come across. 'The language is not ... an organism that lives its own life and develops independently of the people who speak it' (Erik Wellander 1939:I).

The Belgian comparatist Maurice Leroy has recently drawn attention to the astonishingly limited interest the publication of the phonological theses at the First International Congress of Linguists (in 1928) aroused among the linguists present.[17] In

[17] *Bulletin de l'Académie royale de Belgique*, 1967 (where he says, p. 67: 'il ne semble pas que les participants prirent conscience de l'importance d'une proposition que leur soumettaient trois de leurs confrères ni de la révolution fondamentale qu'elle allait provoquer dans leur discipline comme dans les autres sciences humaines connexes. Il s'agit de la *Proposition 22* qui marqua la naissance de la *phonologie* et ... préluda ainsi à ce vaste mouvement auquel on a donné le nom de *structuralisme* ...').

fact, in spite of the existence of forerunners and earlier models the principles laid down there by Jakobson, Karcevsky and Trubetzkoy were nothing less than a revolution as far as linguistic thinking and descriptive methods are concerned. If Saussure's *Cours* contains, in a more or less implicit form, some of the theoretical principles for a future descriptive analysis, Trubetzkoy's and the other phonologists' publications during the thirties implied the first creation of a carefully elaborated descriptive method. Their contributions occupy the same position within modern linguistics as Rask's, Grimm's, and Paul's in 19th century diachrony. Trubetzkoy's *Grundzüge* (1939) and Jakobson's *Kindersprache* (1968) are together with Hjelmslev's *Omkring sprogteoriens grundlæggelse* (1943b) the most important contributions so far to the study of language in the world as a whole. Their consequences for linguistics during the period and in the region which interests us here have been extremely far-reaching.

It was thanks to its less abstract shape that the phonological system in its Prague School form could be used as a starting point for an expression description in terms of relevant acoustic features in the information-carrying sound wave. It was thanks to the contact made at the end of the war between phonology — in Jakobson's person — and sound transmission technique — as represented by the Swedish sound engineer Gunnar Fant — that a fruitful collaboration started and gave rise to an enormous development of instrumental phonetics during the post-war era. Both scholars came, like Morris Halle, from Europe, but it was essentially thanks to American efforts that the advances in both directions (at the Bell Laboratories, MIT, Haskins, etc.) could be successful. We cannot follow up the distinctive feature analysis and its implications in theoretical linguistics here. This would mean that we switch over to the USA, thus leaving the domain of our survey. Let us stop here and have a look at the European centres during the same period.

The influence exerted by the Prague group and by Prague phonology in Western Europe was important in certain countries, whereas, in others, the new trends long remained almost unnoticed. The absence of interest particularly in Sweden[18] and Finland but also in Germany is striking.[19] The same was at the beginning true also for Italy (see below). The situation in Great Britain will be referred to later. In Denmark

[18] The present author was among the first to introduce phonology and Prague linguistics in Sweden (in some elementary articles dating from 1939 and 1940). I gave a presentation of Roman Jakobson's great theory in a press article of 1941 (a review of his *Kindersprache, Aphasie und allgemeine Lautgesetze*, published during its author's exile in Uppsala at that time). But the attitude of the leading Swedish linguists remained negative, even hostile.

[19] In Germany E. and K. Zwirner had founded phonometrical science about 1930 and had thereby introduced the quantitative aspect into phonetic description. By doing so, they brought the concept of CLASS into focus and established a platform on which discussions with the phonologists at least became possible (cp. however Trubetzkoy's critical remarks on Zwirner's NORMS in the 'Introduction' to his *Grundzüge* [1939]). More interesting and more fruitful was an oral discussion between Eberhard Zwirner and Hjelmslev in Copenhagen which resulted in the latter's article "Neue Wege der Experimentalphonetik" (1938). It should be noted that Zwirner's structural thinking has turned out to be much more profound and theoretical than a superficial inspection of his earlier phonometric works seemed to show. His contribution to the Mannheim meeting on synchrony-diachrony mentioned above was extremely important.

— where the parallel rise of glossematics and of other structural tendencies (Brøndal)[20] favoured any debate on formalized problems — and in Norway — where Sommerfelt's sociological orientation had prepared the ground[21] — the phonological theses came early under debate. This was also the case in the Netherlands with N. van Wijk and A. de Groot.

In France the first presentation of structural ideas was made by G. Gougenheim (1935, 1938). Trubetzkoy's ideas early found a skillful representative in André Martinet who — particularly in his doctor's thesis (1937) — applied the new principles, and also published some important introductory articles (1938,[22] 1939, 1947). Martinet's role in French linguistics has been decisive. His linguistic theory, which has developed far beyond the Prague School system, has constituted a solid basis for the scientific training of an impressive group of young linguists, French as well as foreigners. He has also extended his field of interest to parts of linguistics other than phonology. The DOUBLE ARTICULATION is for Martinet the distinctive feature of human language.[23] The author of these lines, who is profoundly indebted to Martinet (his first teacher of structural linguistics at the École des Hautes Études, in 1938) for his basic linguistic training, is on one point not in a position to follow his French master, that is when he denies the discrete character of certain prosodic features such as sentence intonation.[24] But this is a detail. Martinet's well balanced and objective structuralism has been of extreme importance in French linguistics. A great many theses and monographs inspired by him have been published during the last decade, as doctor's theses or otherwise. In some of them, a definitely sociological orientation is noticeable. Quite recently a former student of Martinet's, the British phonologist J. W. F. Mulder, stated the theoretical premises for Martinet's linguistics in his book *Sets and relations in phonology* (1968).

A useful concept introduced by Martinet is that of MONEME. Very often, a morpheme represents more than one content unit (Lat.-*ibus* signals the dative-ablative and the plural; Germ. -*e* in *Hunde* is at the same time a plural and a case suffix, opposing sing. to plur. and to the dative *Hunden*, etc.). -*ibus* is one morpheme but contains two

[20] In Brøndal's work, the influence of Saussure is combined with a strong reliance on early and modern logic. According to Brøndal there are two series of fundamental concepts: *concepts relationnels* and *concepts génériques*. These same concepts retain their validity in the whole of grammar, in morphology, in syntax (the autonomy of which he defends in contrast to Hjelmslev), in phonology and in prosody (1943, 1950).

[21] C. H. Borgstrøm published (in 1937) a preliminary survey of the Norwegian phonological system. Selected papers by Sommerfelt were published under the title of *Diachronic and synchronic aspects of language*, 1962. Hans Vogt early became another skillful defender of structural methods (applied to Caucasian languages, etc.).

[22] The discussion with Maurice Grammont that followed is typical of the difference between the two generations (*Le Français Moderne* 7:133–7).

[23] Martinet's views on descriptive linguistics are also exposed in his later publications, such as *Éléments de linguistique générale* (1960ff.) and *La linguistique synchronique* (1965ff.).

[24] I have motivated my own position in, among others, the following papers: Malmberg 1962a, 1966c, 1968d.

monemes, both signalled by the expression */ibus/*. It is not possible to assign its two functions to special sequences within the string.[25]

Another new concept, which Martinet introduced quite recently, is that of SYNTHÈME. It refers to signs which are treated as simple units and commute with those which are, nevertheless, composed of perfectly identifiable smaller units (Fr. *chemin de fer*, *autoroute*, *indécorable*). Their mode of formation is that of syntagms but they behave like minimal signs and are preexistent to the casual 'generation' of minimal signs. Their place in the descriptive hierarchy is between the indivisible signs and the syntagms (see Martinet 1967).

The phonological technique was taken up in Spain by E. Alarcos Llorach (*Fonología española*, several editions). In Portugal Martinet's former student J. M. Barbosa tried his master's descriptive technique on the phonology and intonation of his mother tongue (1965). A wider survey of the application of structural thinking on problems of language description (phonology, syntax, semantics, style, metrics, reconstruction) was given in the volume *Problemas y principios del estructuralismo lingüístico* (1967).

The Portuguese linguist and dialectologist Manuel de Paiva Boléo (1964–65) gave in an extensive article a survey of modern tendencies in linguistics.

The phonological school — or rather its modern representatives — has constituted a second centre in Vienna where an international congress of phonology was held in 1966 (*Proceedings*, Hamm, Bach and Neweklowsky, 1967) and the international society for phonology was recreated.[26] Except for a number of structurally orientated scholars (Josef Hamm, Otto Back, etc.), Austrian linguists have stuck still more than in Germany to the historical and comparative tradition (the review *Die Sprache*, etc.). The phonological society was to hold its second congress in France (Aix-en-Provence) in 1968, but it had to be postponed.[27]

In present day French linguistics, the structuralist orientation dominates, though it has also taken other forms than that represented by Martinet's system. We notice the influence of applied linguistics (machine translation, quantitative treatment, lexicography, language teaching, etc.), and from other groups claiming the rights of a more strictly formalized treatment of linguistic data. We refer particularly to the well known centres for quantitative linguistics in Nancy and Besançon (B. Quemada). A similar activity is also carried out in Grenoble (R. Gsell). The increasing contacts with sociology and the influence from Claude Lévi-Strauss and social anthropology has been another reason for new structural directions in French linguistics (and also outside linguistics) (cp. e.g. Henri Lefèbvre 1966).[28] A structural approach indepen-

[25] Cp. hereto the analysis practised by Hjelmslev for whom what seems to be one single unit, when regarded superficially, may remain identical throughout several levels of description (Lat. *i* is a sentence, a word /morpheme/, an imperative form in the singular, a syllable, and a vowel). I have treated such cases in my *Structural linguistics and human communication* (1966d:147–50).

[26] With A. Martinet as president.

[27] Excellent surveys of current Prague phonology are given in J. Vachek's publications: 1964a, 1964b.

[28] A whole series of quite recent publications bear witness hereof: J. Piaget 1968; G.C. Lepschy 1968; J.-M. Auzias 1966a, 1966b, 1967a, 1967b.

dent of Martinet's system can be illustrated by G. Faure's analysis of British English intonation (1963).[29]

An inventory of standard and regional forms of French and of its dialects is being prepared in France in different ways, through continued work on the phonological atlas of France and through studies on different aspects of local speech forms. Martinet's *La prononciation du français contemporain* (1945) is being continued and completed by Guiti Deyhime (1967). Marthe Philipp has described the French spoken in Alsace (1967).

A big volume *Le langage* (1968) was published under the direction of Martinet and with the collaboration of numerous French and foreign specialists.[30] It covers most of the branches of modern linguistics and gives a representative survey of the position of linguistics seen from the horizon of Paris. Though Martinet is responsible for the choice of themes and authors, the volume cannot be said to reflect only his view on the problems. It has a very comprehensive and strictly objective character.

In Belgium, the centres for applied linguistics and formalized description have followed the same lines as in France. Advanced instrumental phonetics is carried on in the new Institute of Phonetics in Brussels (N. Wajskop). A more traditionally structural, but very personal and independent type of descriptive analysis is applied by E. Buyssens (1967; cp. above), and M. Leroy (1963). As for N. Ruwet, see below.

A symposium on grammatical methods was organized in Liège in 1964. Its proceedings were published under the title of *Méthodes de la grammaire*; *tradition et nouveauté* (1966). The Danish Romance scholar Andreas Blinkenberg raised the question of the epistemological foundations of linguistics, mostly neglected. He wondered if it was necessary to choose one of the two extremes represented by, on the one hand, a 'deductif' method, on the other a method which looks first for a 'contact with reality'.[31] He believes it will be possible to arrive at a 'global method, within which the particular views will find their proper place'.[32] He calls his methodological view at the same time structural and non-dogmatic. Among the other contributors to this volume we want to mention the Belgians Albert Henry and Guy de Poerck, the Frenchmen A. Martinet, B. Pottier and R.-L. Wagner, and besides Blinkenberg, the Danes H. Sten and K. Togeby. The contributions give with all their variation a good picture of 'Western European Linguistics' today (if such a concept exists!).

In Great Britain, the linguistic situation, at the rise of structuralism on the continent, was somewhat peculiar. Daniel Jones had for many years[33] taught a practical phone-

[29] A representative picture of domains and tendencies in modern French descriptive linguistics is given in the volume *La linguistique* of the *Revue de l'enseignement supérieur* (1967).

[30] Among those Emilio Alarcos Llorach, Eric Buyssens, Pierre Guiraud, Henri Hécaen, Benoît Mandelbrot, Luis Michelena, Jean Perrot, Bernard Pottier, Luis Prieto, Jean-Paul Vinay, Hans Vogt, Uriel Weinreich, and the author of this survey.

[31] 'contact avec la réalité' (p. 36).

[32] 'nous arriverons à la constitution d'une méthode globale, à l'intèrieur de laquelle les vues particulières trouveront leur place assignée' (p. 39).

[33] His *Outline of English phonetics* was worked out during the first World War. It was rewritten in

tics which has a definitely structural orientation without being based on any solid theoretical considerations. The needs of teaching English pronunciation to foreigners and the phonetic transcription involved in it had called forth a working definition of the phoneme. The contacts, in colonies and dominions, with foreign languages and foreign cultures had, just as in the USA, created a need for synchronic analysis methods. The famous London School of Oriental and African studies had been a centre for language description before the Prague school and glossematics. For many years J.R. Firth was the leader of this group, some members of which made themselves famous through excellent phonetic descriptions of exotic languages (Ida Ward, J. Carnochan, etc.). Already before Firth, B. Malinowski had put forward and applied a theory for defining meaning which implies a consideration which he calls 'the context of cultural reality' (see e.g. Malinowski 1923; Firth 1951).[34]

In Italy, the pre-structural tradition (from Ascoli) had remained strong. Even Benedetto Croce's ideas about language (1903) did not at the beginning meet with so much attention in Italy as in Germany where Karl Vossler had published his *Positivismus und Idealismus in der Sprachwissenschaft* already in 1904. Particularly his *Frankreichs Kultur im Spiegel seiner Sprachentwicklung* (1913) became a classic and a model for a kind of research which may be the consequence of the identification of language and culture — and as such, an aspect of the Saussurean 'arbitrary sign' concept — but which later was to be abused for political purposes. A combination of Crocean ideas and the influence from dialect geography as worked out particularly by Gilliéron gave rise, however, to the Italian NEO-LINGUISTICS (M. Bartoli, G. Bertoni, A. Monteverdi, B. Migliorini, A. Schiaffini, G. Bonfante, etc.). The latter's "The Neolinguistic position" (1947) is a representative presentation. Similar lines have been followed in dialect geography in numerous countries, from the Romance domain to Scandinavia. The *Wörter und Sachen* trend, which sees language as a reflection of the environment it is used to express, has considerable affinity with Croce's and Vossler's ideas.

Just as in several other countries, e.g. Sweden and Switzerland (where W. von Wartburg's *Évolution et structure de la langue française*, 1st ed. 1934, was an example), a kind of synchronic description came up which was not structural in the proper sense of the word but nevertheless indicated an orientation towards descriptive analysis (e.g. Migliorini's *Lingua contemporanea*, 1939; *La lingua italiana d'oggi*, 1957).[35]

1932 and has been constantly modified, as was his pronouncing dictionary, during the following 35 years.

[34] The linguistic theories of Malinowski and Firth were recently presented and criticized (without the slightest efforts of objectivity and impartiality) by D.T. Langendoen (1968). Particularly Firth's procedures in his late years, in fact, seem difficult to accept. He represents a very personal and extremely peculiar form of structuralism which — whatever one may think of it — there is every reason to take seriously. If D.T. Langendoen was incapable of doing so, it would have been better not to write the book quoted.

[35] A reflection from Croce is e.g. to be noticed in his Taylorian Lecture called *The Contribution of the individual to language* (1952).

The publication, quite recently, of an Italian version of Saussure's *Cours* (Saussure 1967b) (by Tullio de Mauro, *Corso di linguistica generale*, with notes and comments) might announce the rise of a more strictly structural orientation of linguistics in Italy. The almost simultaneous publication of translations of leading linguists' works (Martinet, etc.) also bears witness to this.

According to Eli Fischer-Jørgensen (1966) it was not until 1925 that Louis Hjelmslev read Saussure's *Cours*. We know that the Saussurean dichotomy FORM/SUBSTANCE — which was to play such an important part in glossematic theory — can be traced as far back as Wilhelm von Humboldt[36] and that Hjelmslev, of course, was well acquainted with the work the German scholar had carried out a century earlier. In Hjelmslev's first great theoretical work, *Principes de grammaire générale* (1929), Saussure's *Cours* is frequently quoted but — as Eli Fischer-Jørgensen points out (1966:2) — he seems to have looked upon it essentially through the eyes of Saussure's pupils (Sechehaye and the other members of the Geneva school). The famous dichotomy is not even mentioned. In Hjelmslev's second great work *La catégorie des cas* (1935–1937), the author's interest is focused on semantics, and the linguistic content remains his main interest until, in the early thirties, he became acquainted with Prague phonology and started his collaboration with the young Danish phonetician H.J. Uldall, the first result of which was Hjelmslev's contribution to the Second Congress of Phonetics (1935). In conscious reaction to the Prague principles — which Hjelmslev always had much difficulty in accepting — Hjelmslev's and Uldall's theory — called GLOSSEMATICS — implied among other things a definition of the phonemes by means of their combinatory relations, alternations, and implications (E. Fischer-Jørgensen, *l.c.*), i.e. by the place they occupy within the system. This is for Hjelmslev the form, as opposed to the sonorous substance in the terms of which the Prague phonologists had defined their units. The procedure of commutation is the same, but once the expression invariants have been set up, they are described quite differently. And in fact they ARE completely different elements. The purely abstract character of the glossematic units (later called CENEMES, empty units) excludes in glossematic theory any further analysis of them into distinctive features, whereas this splitting up became a necessity in Prague school phonology, with its concentration on the basic difference between relevant and irrelevant sound qualities.

Saussure's *Cours* was not, however, the only source of glossematic formal thinking. Hjelmslev was solidly acquainted with logistic theory and strongly influenced by Rudolf Carnap. His *Logische Syntax der Sprache* (1934) is quoted by Hjelmslev in 1938 (p. 163). What characterizes glossematics as opposed to other structural schools is not the dichotomy form/substance as such. It is Hjelmslev's thesis that only the form should be the object of linguistics and that the distinction between the two planes should be maintained throughout the two independent hierarchies in language constituted by the strictly applied CONTENT/EXPRESSION opposition. These two each have

[36] Or, if we want to be more accurate, to classical philosophy. See also R. Langham Brown, *Wilhelm von Humboldt's conception of linguistic relativity* (1967).

in Hjelmslev's theory their form and their substance. They are combined in the sign through COMMUTATION. The analysis must be carried out from the beginning to the end within each of them independently. Consequently morphemes as the minimal signs cannot be split up into phonemes, and phonemes do not build up morphemes.

What phonemes build up, is the expression side of a double-faced sign. Morphemes are minimal units and indivisible units. Hjelmslev envisaged a possible division of the content into FIGURAE in the same way as the expression was divided into smaller (distinctive) expression figurae. But Martinet's moneme concept is not to be found in Hjelmslev's writings.

Characteristic of Hjelmslev is, as we have mentioned, his view on the linguistic substance (sounds or graphic units on the expression side, meaning on the content plane). The place of substance is not everywhere quite clear in his works and he seems to have modified his position on this point in his later works. In the English version of *Omkring Sprogteoriens grundlæggelse* (1943b), *Prolegomena to a theory of language*, which is due to Francis J. Whitfield (1st ed. 1953, revised in 1961), the original 'substance' has been split up into 'purport' and 'substance'. The later term in several places in the second edition of the translation has been replaced by the first. 'Substance' now becomes for Hjelmslev a substance which manifests a formerly defined linguistic element (in phonetics the sound structure which, in a given language, serves as a manifestation of a given phoneme). 'Purport' on the other hand refers to sound or meaning as such and independently of any relation to a functional linguistic element. This is closer to Saussure's so-called amorphous substance. By making this distinction Hjelmslev comes closer to that of contemporary linguists and recalls E. Coseriu's levels as worked out in his *Forma y sustancia en los sonidos del lenguaje* (1954) where it is expressly stated that a completely amorphous mass is inaccessible to knowledge (this was so also according to Hjelmslev).[37]

In the discussion about glossematics the place of substance in the linguistic description has been one of the crucial points. Martinet has taken the position that an exhaustive description of the expression elements is impossible if their manifestations as articulations or as sounds is not taken into account. This was also stressed by Eli Fischer-Jørgensen. In her article "Form and substance in glossematics" (1966) she stresses that what in fact interested Hjelmslev was to give a complete survey of the phonemic possibilities of the language, i.e. of what a speaker can do in any given position in the chain. If, say, a system uses 10 consonants in prevocalic, and only 5 in postvocalic positions, this statement gives a full account of the consonantal distinctive possibilities within the syllables of that language. The question if initial *p-* should be identified with

[37] On the phonemic-phonetic plane, the present author has proposed to replace the dichotomous form/substance distinction by a scale with several levels of abstraction, from the most concrete or substantial one where phonemic units are described by an enumeration of the distinctive and redundant phonetic phenomena by which they are effectively represented in speech (I leave out on purpose here the delicate question of relevancy versus redundancy on this level) and up (or down) to the most abstract level where only purely formal (functional) descriptions are given. See my 1962b article and 1966d:96–117.

final *-p* or with, say, final *-r* is irrelevant for the primary purpose of describing how a speaker is able to use the units in the paradigm of that language. The classification of syllable initial and syllable final consonants as allophones of invariant phonemes does not come up until the formal units, previously set up, are projected on the unformed, amorphous 'purport', thus transforming this into 'substance'. A corresponding 'meaning-free' content description has in the same way been disputed by many linguists.

We have mentioned the importance of Uldall's collaboration for the elaboration of glossematic ideas. His *Outline of Glossematics* (1957) has a wide scope, as may be seen from the title. Uldall is skeptical of the traditional opinion that certain materials require certain methods to the exclusion of others. The aims of glossematics are just as far-reaching as that of the famous historian A.J. Toynbee who, in his *Study of history* (1934–54), had tried to find a pattern, a set of laws from which the past history of civilisations could be deduced. 'The algebra we have presented here [Uldall says] ... is universal, i.e. its application is not confined to materials of any particular kind, and it is not specifically linguistic, or even humanistic, in scope or character.'

Hjelmslev's preference for formalised algebraic descriptions of humanistic material has often been attributed to influences from his father, the famous mathematician Johannes Hjelmslev. He himself used to deny such a dependence. And in fact, this tendency in Hjelmslev's thinking has striking parallels in Saussure's writings, though less in the *Cours* than elsewhere. It is on the other hand uncertain if Hjelmslev ever read Godel's (1957) edition of Saussure's *Sources manuscrites*.[38] We must remember that Hjelsmlev had made, already in 1943, formulations like 'the algebra of linguistics'[39] which were to be found again 15 years later in the earlier unknown and unpublished *Sources manuscrites*. On the other hand, if Hjelmslev is indebted to logicians like Carnap, it should be noticed that one of Saussure's most precious contributions to science was the re-establishement of the organic contact between logic and linguistics which had been broken by the rise of diachrony and romanticism. He had been Michel Bréal's pupil at the Collège de France, and he may have taken over his

[38] Cp. quotations such as 'La linguistique m'apparaît comme un système de géométrie' (p. 30) or 'Les quantités du langage et leurs rapports sont régulièrement exprimables, dans leur nature fondamentale, par des formules mathématiques' (p. 44) in G. Mounin's book (1968) *Ferdinand de Saussure*, p. 27. Saussure himself tells us in his *Souvenirs* (1960) that he had lost a year studying sciences, thus following a kind of family tradition (Mounin, p. 14). This mathematical inclincation was completely foreign to all the contemporary linguists. Meillet declined explicitly any quantitative treatment of linguistic elements.

[39] In a press article (1946), the Swedish linguist Erik Wellander raises the question if Saussure could have been influenced by a doctor's thesis published in Sweden at that time (Carl Svedelius 1897, pleading for a synchronic description, but far too advanced to be estimated by the author's contemporaries). When, two years later, the famous Romance scholar W. Meyer-Lübke, reviewed Svedelius' thesis (in *Literaturblatt für germanische und romanische Philologie*) he describes it as 'the algebra of grammar'. See hereto my *New trends in linguistics*, 1964a, p. 35–6 and note 1.

master's tendency to treat linguistic problems as if they were logico-mathematical ones.[40] And he was aware of his indebtedness to Port-Royal.[41]

A theory is, according to Hjelmslev, the simplest possible, if it is built on no other suppositions than the bare minimum required by the subject. Furthermore, in order to be valid, it must lead to results which agree with the data of experience. He sets up an EMPIRICAL PRINCIPLE which has three requirements: THE DESCRIPTION SHALL BE SELF-CONSISTENT, EXHAUSTIVE, and AS SIMPLE AS POSSIBLE. The first requirement takes priority over the second, and the second over the third. If the traditional method of linguistics is INDUCTIVE, i.e. moves from the particular to the general (from the individual sound, or the individual meaning, to classes of sounds, or to general or basic meanings, generally speaking FROM SEGMENT TO CLASS), as synthetic and generalising method, Hjelmslev's procedure is ANALYTIC and SPECIFYING and his method itself DEDUCTIVE (a term which he uses in a way which is not the same as in ordinary usage). Glossematic analysis starts with the datum: the unanalysed TEXT as a whole ('text' being used by him in its widest possible meaning, that of any specimen of language, long or short, spoken or written). The text is a class, which is divided up into segments, each segment forming yet another class, which is also divided into segments, and the process is repeated until the possibilities of further division are exhausted. The method must be applicable to all existing texts and to future texts, irrespective of the language in which they are written. By selecting and analysing, for example a number of Danish texts, the linguist obtains with the help of linguistic theory a corpus of data about the system on which all, say, Danish texts are based and with whose help it is possible to FORM NEW DANISH TEXTS.[42] But the theory must be so general that it is valid for all other existing languages and in principle for all other possible languages, whether they ever come into existence or not.

Hjelmslev's health was weak during his last years. He died in 1965. Uldall had already died in 1957. During very many years, Hjelmslev and Uldall had been separated from each other, the former working the whole time in Copenhagen, the latter being attached to language learning centres and scientific institutions in different parts of the world. Their thinking developed differently, and the planned great presentation of glossematics, of which Uldall's quoted introduction was intended to be the first

[40] See Mounin, 1968:30, who quotes: 'Des philosophes, des logiciens, des psychologues ont peut-être pu nous apprendre quel était le contrat fondamental entre l'idée et le symbole' (from Godel 1957:45).

[41] This merits consideration, since the same indebtedness, explicitly formulated, is to be noticed within the Chomskian school today (N. Chomsky, *Cartesian linguistics*, 1966, etc.).

[42] He does not use the term 'generate' but it is easy to see that the basic principle behind man's capacity to generate new, never heard or never seen utterances in a given language is a main concern within glossematic theory. The vulgar characterisation of structuralism as 'taxonomic' becomes particularly grotesque when applied to Hjelmslev's system, beyond doubt the most profoundly structural of all linguistic theories bearing this name. The generative aspect is by definition basic within glossematic theory. Hjelmslev's concern is constantly what we CAN do within a given language, not what we most frequently do. He is just as indifferent to the question of frequency as is Chomsky. If Chomsky had ever cared to penetrate Hjelmslev's ideas he would have discovered that his own were not quite so original as he himself seems to believe.

part, never came out. The late publications of the translations of *Omkring Sprogteoriens Grundlæggelse* (the French not until 1968) was another reason why glossematics did not at first meet the attention its revolutionary character merited, neither positively nor negatively.[43] Martinet published in 1946 a penetrating review of it (1946; reprinted as offprint in 1968), where he particularly criticises Hjelmslev's thesis that linguistic units can be described without reference to substance. The Dutch linguist Berta Siertsema's doctoral thesis on glossematics (1955) was a profound, partly critical analysis of Hjelmslev's ideas. The Spanish linguist Alarcos Llorach published a presentation of the glossematic system in his *Grámatica estructural, según la escuela de Copenhague* (1951).

In Denmark itself, where Hjelmslev after Brøndal's death (in 1942) was for many years the indisputable leader of the Linguistic Circle, a certain decline in glossematic activity could be noticed already in the early sixties. Paul Diderichsen (who died in 1964) was in the first generation of Hjelmslev's collaborators (among other things by applying structural and glossematic principles on concrete material: sentence structure in his 1941 book; an elementary Danish grammar, 1946ff., etc.), next to Hjelmslev the most important among the Danish linguists, at least after Uldall's death. In his later years, he was opposed more and more to certain of Hjelmslev's principles and disliked particularly his reinterpretation of Rasmus Rask's ideas as structuralism (1960).[44] Another Danish linguist, from the beginning a comparatist like Hjelmslev, Jens Holt, has particularly worked on the content analysis technique ('pleremics'; e.g. 1946, 1959).

Certain of Hjelmslev's earlier students have contributed to the continuation and development of the glossematic tradition in Denmark. Knud Togeby had already published in 1951 his *Structure immanente de la langue française*, where he tried to apply glossematic principles to the description of French. Henning Spang-Hanssen (1954) made a penetrating analysis of the sign concept and published a doctor's thesis on probability in linguistic description with special consideration of graphemics (1959). A collection of glossematic studies, mostly by members of a younger generation of Danish scholars, was published in the French series *Langages*, no. 6, 1967 (ed. K. Togeby). The treatises Eli Fischer-Jørgensen published, on glossematics and on Hjelmslev after his death, belong to the most clarifiying and most penetrating studies ever made on these difficult subjects. They were carried out by someone who had been personally and closely connected with him and who, from being his student, had become his collaborator, interpreter, and critic.[45]

In his article "Fondement épistémologique de la glossématique" (1967) Hans Christian Sørensen summarizes some of the basic principles of glossematics by stressing what

[43] As a student of Holger Pedersen (the famous comparatist), Hjelmslev first studied and worked with comparative linguistics. His *Principes de grammaire générale* was refused as a doctor's thesis for being too theoretical, and Hjelmslev became a doctor on his *Études baltiques* (1932).

[44] Selected papers from Diderichsen's works were published in 1966.

[45] I myself published an obituary article on Hjelmslev (1966a).

Hjelmslev himself pointed out in *Omkring Sprogteoriens Gundlæggelse*. We must make a distinction between the theory of language (cp. above) and a philosophy of language. The theory is purely deductive and independent of any experience. It just permits a calculation of possibilities following from the proposed data. Sørensen regards this linguistics as parallel to the so-called exact sciences such as logic, algebra, or theoretical geometry. Those are systems which can be built up arbitrarily, like a game where everything is possible which is in conformity with the rules. Such deductive systems are based on indefinable and axiomatic elements. The choice of such elements determines the aspect of the system, and the choice can be arbitrary, since the systems in question do not need to have any relationship with an object of the real world. This does not, however, imply that a deductive system cannot constitute a science capable of informing us about these objects of the real world, and that such a system could not be a science of realities. Hjelmslev distinguishes between the arbitrary character of the theory and its ADEQUATE character which is revealed when it is used in practice for the description of real objects and their relations. Once the observations are made, it becomes possible to construct hypotheses ('laws') whose value, in contradistinction to the theory, depends exclusively on the verification. The use of the axiomatic method, Sørensen says, does not seem to differ from the practice used in other exact and generally accepted sciences.

In the article "La théorie glossématique est-elle une théorie?" (1967), Henrik Prebensen starts by saying that he understands by LANGUAGE or CALCULUS a system of signs and of rules determining their use. The syntax of such a language comprises rules of FORMATION (the French word he uses) which introduces the basic signs and governs the building up of the expressions admitted by the language. The syntax of such a system also contains RULES OF TRANSFORMATION presenting a certain number of PRIMITIVE PROPOSITIONS (axioms) defining implicitly the characteristics of the basic signs and INFERENCE RULES which permit us to prove other propositions (theorems) and to derive propositions starting from given premises. The author's intention is to illustrate what he understands by a theory, his aim being to discuss whether, with his definition, the glossematic theory is a real theory.

Prebensen's answer to this question is a negative one. It is among other things impossible, he claims, to find a basic language for the theory and to formalize it. It cannot be possible to maintain, he goes on, that the glossematic theory is a deductive system, i.e. a theory in the sense he gives to this concept. Hjelmslev's fundamental definitions are said not to survive a critical scrutiny. Thus, his effort would not have been successful if the critic's arguments were compelling. Prebensen does not, however, conclude that nothing would remain of Hjelmslevian glossematics. *Omkring Sprogteoriens Grundlæggelse* is not only an ENSEMBLE of definitions. Numerous important remarks will still be able to inspire linguists (see Lamb 1966). For Prebensen, the inheritance from Hjelmslev is a number of fruitful ideas that no linguist can ignore, and a task which his followers have to carry further and make definitive: i.e. the

incorporation of the new elements with which he has enriched linguistics into a general theory of language.

The interest in glossematics seemed to diminish after Hjelmslev's death. There was nobody in Denmark who was capable of taking over his undisputed leadership. And in fact, as he himself once put it in his inaugural lecture (in 1937), the Danish tradition in linguistics consists in not sticking to the tradition (cp. the criticism just quoted). Quite recently, however, Hjelmslev seems to have been the object of increased attention abroad, particularly in France after the publication of *Le langage* (1966; transl. of *Sproget*, 1963) and of *Omkring Sprogteoriens Grundlæggelse* (1968; *Prolégomènes à une théorie du langage*, 1968). Another example is the above mentioned volume (6) in the series *Langages*.[46]

There is no doubt, however, that glossematics has left very important traces in Danish descriptive linguistics. Eli Fischer-Jørgensen's (1960) and Poul Andersen's (1954) descriptions of the Danish phonemic system were influenced by this model. A number of dialect descriptions are inspired from the same source.[47] Other Danish scholars have worked in the same spirit on e.g. English, German, Slavic, Finnish, Romance, etc.[48]

Descriptive linguistics in Sweden, when it began to be practised, never followed very strictly any of the foreign models. Just as in Italy, descriptive analyses of modern languages slowly became more numerous, and a similar tendency to concentrate on synchronic stages made itself felt in dialectology. A few structural studies on the Swedish phonemic system were carried out more or less according to Prague phonology (C.-C. Elert 1965, C. Witting 1959, and, on certain details, by the author of this article[49]). During the last years, a strongly increasing interest in the description of spoken Swedish has made itself felt and has given rise to far-reaching team-work on the contemporary spoken language.[50] A number of monographs have been devoted

[46] For a survey of the basic glossematic ideas, see Malmberg 1964a:140–57.

[47] Cp. e.g. Poul Andersen's 1958 *Fonemsystemet i Østfynsk*, = 'The phonemic system of the dialect of Eastern Fyn' (one of the big Danish islands); Anders Bjerrum's *Fjoldemålets Lydsystem* (= 'the sound system of the Fjolde-dialect', 1944); Ella Jensen's *Houlbjergmålet* (= 'the Houlbjerg-dialect', 1944).

[48] See Bent Nordhjem's *The phonemes of English* (1960), Gunnar Bech's *Das semantische System der deutschen Modalverba* (1949), *id., Zur Syntax des tschechischen Konjunktivs mit einem Anhang über den russischen Konjunktiv* (1951), Jacob Louis Mey, *La catégorie du nombre en finnois moderne* (1960), K. Togeby, *Mode, aspect et temps en espagnol* (1953; cp. also the same scholar's structural analysis of French, quoted above).

[49] *Nyare fonetiska rön och andra uppsatser i allmän och svensk fonetik* (= recent phonetical discoveries and other articles on general and Swedish phonetics, 1966b).

[50] A group of young linguists under the direction of Hans Karlgren and attached to the University of Stockholm are working on the application of linguistic machine analysis and statistical techniques and computer methods. See e.g. Alvar Ellegård, Hans Karlgren, and Henning Spang-Hanssen, *Structures and quanta* (1963). In Lund an institute for the analysis of syntax in spoken language ('talsyntax') has been active for a few years under the direction of Bengt Loman (who worked on sociolinguistics in the USA attached to the Center for Applied Linguistics in Washington; see his *Conversations in a Negro American dialect*, 1967).

to local forms of the standard language (descriptions of the language in the province of Skåne, in Göteborg, in Härnösand, of social layers of the Stockholm dialect, etc.), though most of these are on a pre-structural or quasi-structural model. Studies along more scientific principles are now being prepared and material collected according to modern demands. A particular line of phonological research with traditions from the Prague school has been followed up by Bengt Sigurd in his phonotactic analysis of modern Swedish (1965).

In Norway, where E.W. Selmer had founded a solid (prestructural) tradition of instrumental analysis of word-tones, the prosodic analysis has been taken up again on a more modern basis by, among others, Martin Kloster Jensen (1961), the Dane J. Rischel and Knut Finntoft (in different articles and in a so far unpublished great monograph). A phonemic analysis of a city dialect (Trondheim) was made by Arne Vanvik (1966). Eva Sivertsen had devoted a modern phonetic-phonemic analysis to Cockney (1960).

So-called generative and transformational grammar has been introduced and discussed in most countries of Western Europe during the last years. In fact, this view on language and on linguistic description has in general seemed much less revolutionary to European linguists than to the Americans who had been educated in the Bloomfieldian tradition. It seems to have impressed particularly those European groups and centres which had remained faithful to the historical tradition and which had, so to say, skipped the period of European structuralism (Saussure, Prague phonology, glossematics) and were therefore easily impressed with the usefulness of a formalization which had so much in common with traditional grammatical thinking. Transformations were e.g. currently used in grammatical analysis in school teaching when I was a schoolboy in the early twenties. European structuralists have either declined the Chomskian aspect altogether, or have accepted it while pointing out that most of it was not new, or have taken it seriously, looking upon it as a new and handy technique which, particularly in syntactic description, could give new and useful solutions of problems left unsolved by classical structural methods. It has seemed to many — and it seems so to the author of this article — that the positing of the deep structures as opposed to the surface structures has been an important step towards the discovery of the language universals in which all linguists today, independently of their ideological startingpoints, are so interested. Many have seen the transformations as a useful basis for language learning — in reaction to an extreme direct method with its roots in earlier structuralism.

This is not the place to take up again a discussion about generative grammar. The picture of Western European linguistics would not, however, be complete without a few notices on how different European linguists have reacted to Chomsky's ideas.

The most extensive presentation of Chomsky's system in France, and I think, in Europe, is that of the Belgian Nicolas Ruwet (1967). A condensed critical article — at the same time a very impartial exposition — is that of the French Blanche Grunig

(1966). The German anglicist Gerhard Nickel has made valuable contributions to a generative and transformational description of English (e.g. his report to the 10th International Congress of Linguists in Bucharest, 1967) and to its pedagogical applications (1968).

Some young Swedish linguists have treated aspects of Swedish phonology and morphology according to Chomsky's principles (C. C. Elert, prosody, S. Öhman, morpho-phonology of the verb, Lindblom, diphthongization). The Anglicist Alvar Ellegård is working on an English transformational grammar.

The Finnish phonetician Kalevi Wiik has submitted certain aspects of Finnish to a generative analysis.

In a recent article, K. Kohler made an interesting comparison between Firthian linguistics and generative grammar (1967; see the above reference to the London school), introducing an important distinction between language description which is said to represent the speaker's competence, and 'linguistic evaluating procedures, which are the linguist's operations designed to lead to a language description' (p. 201). The Dutch linguist E. M. Uhlenbeck (1963) has questioned the validity of the very principles of transformational grammar. He warns against the setting up of distinctions for which there is no evidence in linguistic data. 'If a structure turns out to be ambiguous, this does not oblige us automatically to assume the existence of two different structures' (p. 9).[51]

An extremely important criticism — on grounds which seem to the author of this article quite convincing — has been directed against Chomsky by Bernard Saint-Jacques (1967) who particularly denies man's 'ability to produce and understand instantly new sentences that are not similar to those previously heard in any physically defined sense ...' (Chomsky, *Aspects of the theory of syntax*, p. 58; p. 38 in the article quoted).[52]

The most violent attacks against Chomsky's linguistic methods come, however, from Gustav Herdan who, on a strictly theoretical basis, denies their scientific character (1967, and, in still more extreme terms, "'Götzendämmerung' at M.I.T.", 1968).

Considerable interest has been attached to the problem of the relations — or at least ressemblances — between a generative description and diachronic phonology. The Finno-Swedish Anglicist Nils Erik Enkvist draws attention to these facts in his study *Tre modeller för ljudhistorisk forskning* (= three models of diachronic phonological research; 1966). The same problems have been treated in Sweden by Bengt Sigurd 1967).

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[51] I gave a survey of the transformational grammar and the debate around it in 1964a:174–80.
[52] I have made the same observation myself in a recent book on phonetic research (in Swedish; 1969).

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PHONOLOGY AND PHONETICS

ERIK C. FUDGE

INTRODUCTION

Most of the West European approaches to phonology owe something to one or both of Baudouin de Courtenay and de Saussure. The former, being Polish, falls outside the scope of this study, but a brief consideration of de Saussure's ideas will form a fitting introduction; we restrict ourselves to two interrelated thoughts:

1. Synchronic study of language should have priority over diachronic. To study the historical development of the elements of a language it is not sufficient to consider each element singly; we must study the development of the system as a whole, and this implies the comparison of the system operating at one moment of time with the systems operating at other moments. Thus historical study cannot take place unless it is possible to describe the linguistic system operating at a particular time.

2. The system of a language ('langue') is abstract, as opposed to the stream of speech ('parole') which is concrete: 'la langue élabore ses unités en se constituant entre deux masses amorphes ... cette combinaison produit une forme, non une substance' (de Saussure 1916:157); 'dans la langue il n'y a que des différences sans termes positifs' (*ibid.*:166), and hence the 'valeur' of a linguistic element (its contribution to the working of the system) is determined as much (sometimes more) by its oppositions with other elements as by the properties that represent it in speech.

The most interesting development of these ideas is the theory known as GLOSSEMATICS (see §4 of this study). Also, as one might expect, the approach to linguistics adopted in Geneva (where de Saussure was professor) reflects his teaching fairly faithfully: for summaries of work done in Geneva see Sechehaye 1927, Godel 1961 — Engler 1962 is worthy of note as a further contribution. A useful critical study of de Saussure's linguistics is Wells 1947.

The present study takes the following form. In §§1–4 we give an account of the four theoretical approaches to phonology which have been most influential in Western Europe. §5 is a summary of work in phonetics, while §6 deals with the 'prosodic' or 'suprasegmental' features and the elements (notably syllables and words) associated with them. Particular attention has been paid to prosodic phonology (§3) and glossematics (§4) — as well as being 'difficult', these are perhaps peculiar to Western Europe in a sense which the other theories are not.

Unfortunately this type of scheme makes it difficult to do justice to studies by certain scholars who are not committed to any particular 'school'; the work of Bazell (e.g. 1952, 1953) is a case in point.

1. INFLUENCE OF THE PRAGUE CIRCLE IN WESTERN EUROPE

1.1 *Historical*

Several West European scholars were members of the Linguistic Circle of Prague or in close touch with the Circle, including notably the following (dates of publications relevant to the present study are given in parentheses): Bühler (1931), de Groot (1931, 1939, 1941 — a full list of his publications appears in *Lingua* 11 (1962:xii-ix)), and, above all, Martinet (1939, 1949b, 1954, 1957 — all four of these appear in revised form in Martinet 1965; 1946, 1949a, 1955; chapter III of Martinet 1960 (translations into English (1964), and other European languages) forms a useful introduction to his phonological approach; his works up to 1965 are listed in full in Martinet 1965:231–46).

The influence of the Prague Circle, or interest in its approach, are shown in (among others) the following works: Gougenheim 1935, van Wijk 1939 (a detailed treatment of phonology differing from the Prague approach mainly in the greater weight given to speakers' intuition), Alarcos Llorach 1950 (a 'classical' Prague treatment of Spanish phonology), Maack 1957, Pilch 1964 (a work showing strong American influence).

The early development of Prague phonology is traced in Richter 1930, while Zwirner 1964 deals with the implications of Trubetzkoy's theories for phonetics. Vachek 1966 is a useful theoretical and historical summary of Prague work, though with considerable emphasis on Czech contributions.

1.2 *West European Contributions to a Rapprochement between Phonology and Phonetics*

To a certain extent, Prague phonology represented a widening of the gap between linguistics and 'experimental' (instrumental) phonetics (see below, §5.2), insofar as it insisted on a strict separation between phonology and phonetics, assigning the former to the sciences and the latter, as an integral part of language study, to the humanities. One of Martinet's distinctive contributions has been an attempt to bridge this gap by treating phonology as 'functional phonetics' (see Martinet 1949a); his theory will be outlined in §1.3 below.

Another leading advocate of a rapprochement between phonology and phonetics is Malmberg (see especially Malmberg 1942, 1945, 1949). Phonetic studies cannot be carried out on a non-linguistic basis, but demand important linguistic assumptions

(1956a, 1962a), but conversely, phonological structure cannot be set up without the aid of phonetic substance (1956a, 1962b). Furthermore, it is not sufficient to arrive at an overall system of phonemes for the language being analysed; more detailed statements of the utilization of phonemes are called for, as well as an account of the circumstances under which oppositions may be neutralized, and syllabic structure is of great importance (Malmberg 1949).

1.3 *André Martinet's Theory of Phonology*

Martinet takes the distinguishing feature of language as opposed to other forms of vocal utterance as its 'double articulation' (Martinet 1949b, 1965:1–35). Experience which is to be communicated linguistically is first 'articulated' into MONEMES (MORPHEMES in the English sense, including roots as well as affixes), and each moneme is then further articulated into PHONEMES, recurrent elements very restricted in number, with no direct semantic value. In spoken language each phoneme is represented by some combination of sound features.

Another important concept in Martinet's work is that of ECONOMY (see especially Martinet 1955). Firstly, we may note that the double articulation of language is a sine qua non of economy, since it is only in this way that the whole of experience can be matched with sequences of elements chosen from a finite, and very small, set. Even more important, the need for economy sets up a tension in the communicative process: for the speaker, economy is represented by the principle of least effort, while the hearer requires a signal containing enough of the sound features prescribed by the language to enable him to perceive it correctly. This tension results in a kind of equilibrium in the communicative process, and also in the language system; when the system becomes unbalanced, changes may take place with a view to restoring equilibrium. Thus Martinet claims that the concept of economy enables the linguist to explain the actual changes which take place in a language system; what the theory does not explain, however, is why many changes appear to take place in the direction of increasing unbalance, and why no language ever seems to attain the equilibrium towards which it is supposed to be tending.

For Martinet 'the aim of phonological analysis is to identify the phonic elements of a language and to classify them according to their function in that language' (1964:53 — page references in this section are to this work unless otherwise stated). There are three fundamental functions: (a) distinctive or oppositional, enabling the hearer to know that one word rather than another has been uttered by the speaker, (b) demarcative, enabling the hearer to analyse the utterance into successive units, and (c) expressive, informing the hearer about the state of mind of the speaker (:53–54). Function is independent of the objective physical character of a sound, and so phonological analysis 'should group together facts which fulfil the same function even if they are physically different, and ... separate those which have different functions even if in

a material sense they are similar' (:55). An utterance may be segmented into parts (PHONEMES) which recur in other utterances — a phoneme may include two successive sounds, or a single sound may represent (REALIZE or MANIFEST) two successive phonemes (:58–9, cf. 41, 74–5). Furthermore 'one and the same phoneme may be realized in different ways according to the environment [cf. COMBINATORY VARIANTS (:66–8)], and one and the same sound may be the manifestation of different phonemes' (:60–1).

Phonemes are classified on the basis of the articulatory choices open to the speaker as he produces them: thus French *d* is distinguished from *t* by presence of glottal vibration, from *n* by raised velum, from *b* by apical closure as opposed to bilabial closure, and from *l* by complete closure as opposed to laterality (air escaping at the sides of the tongue), and therefore has the relevant (distinctive) features (i) glottal vibration, (ii) non-nasality, (iii) apical closure, (iv) non-laterality; French *l* has all of (i)-(iii) as PHONETIC features, but only LATERALITY as a DISTINCTIVE feature, since it does not contrast with voiceless, nasal or bilabial laterals (:62–4). Features which are distinctive in some positions may be non-distinctive in others, e.g. the feature VOICELESS of Russian [p], which is distinctive in syllable-initial position, but non-distinctive elsewhere (precluded before voiced consonants, and automatic word-finally and before voiceless consonants) (:68–70). In positions where such a feature is not distinctive, there is said to be NEUTRALIZATION of the oppositions involving that feature, and we have a single distinctive unit (the ARCHIPHONEME /P/) which embraces the two units /p/ and /b/ which appear syllable-initially (:69). For a dissentient voice on neutralization see Decaux 1966.

Besides phonemes there are other phonological elements of importance, the PROSODIES (:75–87), which include 'all the facts of speech which do not fall within the phonematic framework, in other words those which for one reason or another elude the second articulation' (:75). Some of these, such as tones, are 'discrete units in the same sense as phonemes', while others 'lend themselves less well to the characterization of discrete units' (:75). For a treatment of prosodic features see Martinet 1954.

1.4 *The 'Distinctive Feature' Approach*

During the 1930s, Prague phonologists realised that although phonemes were not further segmentable into smaller SUCCESSIVE units, they could and should be divided into smaller SIMULTANEOUS units on the basis of the distinctive oppositions between them. Some, with Trubetzkoy (1939:61), distinguish carefully between BILATERAL oppositions (e.g. voiced v. voiceless) and MULTILATERAL oppositions (high-mid-low in vowels), whereas others, following Jakobson (1939), attempt to reduce all oppositions to binary ones. The latter conception has been the more influential, though there have always been reservations about how far differences of vowel height can be handled in terms of binary oppositions.

With the development of techniques for the spectrographic analysis of speech, the

'distinctive feature' theory of Jakobson has been increasingly anchored to an 'acoustic' (strictly speaking, auditory and perceptual) basis (Jakobson et al. 1952). This theory is an attempt to fit the distinctive oppositions of languages into a universal framework consisting of twelve binary oppositions, each of which is statable in terms of positive and negative values of a phonetic feature, e.g. [+Nasal] v. [−Nasal]. For West European examples of analyses in these terms see Malmberg 1956b, 1962c; Heike 1961, 1964; and for a theoretical discussion of the binary distinctive feature framework see Ungeheuer 1959, also (a briefer treatment) Fischer-Jørgensen 1958:471–8.

The Jakobsonian framework was at first utilized by Halle (1959) in the phonological component of a generative grammar (Bierwisch 1966a outlines this approach, while Rohrer 1967 is a fragment of such a grammar by a West European), though the framework of later work has been vastly different as regards the inventory of features used (e.g. Chomsky and Halle 1968). West Europeans have so far tended to adapt the framework rather than accept it in detail: Bierwisch 1966b applies the approach to intonation, while Kohler 1966, 1967, and Fudge 1967, 1969a show considerable differences from the work of the Americans (in fact in these last four works the Prague influence is minimal).

2. DANIEL JONES

2.1 *Historical*

Jones was appointed as lecturer in phonetics at University College, London in 1907, and his first publications date from the same year. Jones 1948 gives a brief outline of the development of the department of which he was head until 1949, and also an indication of the special emphases of the department's teaching: ear training, with nonsense words playing a large part, performance, transcription and reading from transcription — intonation and other 'prosodic' features receiving special notice.

The phoneme as a concept explicitly differentiated from the speech-sound was first brought to Jones's notice by two pupils of the Polish linguist Baudouin de Courtenay: Ščerba 1911 referred to the concept, while Tytus Benni explained the theory to him more fully in 1913. By 1915 the theory was beginning to be reflected by the teaching in Jones's department; the first London publications expounding the theory date from 1917 (see Jones 1957:5–11). Something like a phonemic approach was, however, implicit in his work before this period (1957:5).

Extensions of the phoneme idea to the so-called 'sound attributes' (length, stress, voice-pitch, etc.) soon took place, the most noteworthy being the work of the American D. M. Beach in the field of tone (Jones 1957:12–13; see also below, §2.4).

Among Jones's works, listed in full in Abercrombie et al. (1964:xi-xix), special mention must be made of a series of books on the phonetics of English (notably Jones 1909, 1918), and a general work of theoretical phonology (Jones 1950 — page references below will be to the second edition, Jones 1962). A useful summary and

preliminary statement of the ideas of this last work is to be found in Jones 1944. Other significant contributions to the subject include his editorship (1907–49) of *Le Maître Phonétique* (the organ of the International Phonetic Association), and his general editorship of the *London Phonetic Readers* series.

2.2 *Theoretical Background*

For Daniel Jones phonology and the phoneme were basically a means of transcribing languages to provide foreign learners with an unambiguous guide to their pronunciation, while at the same time eliminating as much phonetic detail as possible. In this he was consciously following Henry Sweet (Jones 1957:4; Jakobson 1966), who first drew a distinction between 'broad' and 'narrow' transcriptions.

The need for the 'phoneme' idea is attributed by Jones (1962:7) to the fact that 'it is constantly found in language study that several distinct sounds ... in a language have to be considered as if they were one for orthographic, grammatical and semantic purposes'. However, it is clear from the chosen definition of the phoneme (see below, §2.3) and from the way in which difficult cases are handled that for Jones phonetic and distributional considerations are of greater importance than the purposes stated. In fact, non-phonetic factors are constantly termed 'inadmissible' (1962:65) or 'unsatisfactory' (*ibid.*:104); considerations leading to the occasional assignment of a sound to two different phonemes (see below, end of §2.3), such as 'the history of the sounds, the sounds of related dialects, analogy, grammatical relationships and perhaps even conventional writing', are called 'external facts unconnected with the idea of the phoneme' (*ibid.*:100) — the di-phonemic assignments to which they lead 'could not be justified on phonetic grounds, but... might be found to have a certain practical convenience from the linguistic point of view' (*ibid.*).

The chief objects of phonetic transcription are '(1) to put on record the phonemic make-up of languages, and (2) to facilitate the acquisition of a good pronunciation of foreign languages, by showing the learner which of the sounds of the language are the appropriate ones to use in any given word or sentence' (Jones 1962:220). The assumption that these two objects may both be attained by the same style of transcription is not questioned: 'The simplest form of transcription adequate for *this purpose* is that which records the language by means of one letter for each phoneme, i.e. what is called an "allophonic" [sic — "phonemic" is meant] or "linguistically broad transcription"' (*ibid.* — italics ours). In fact, however, object (2) is often best served by a different kind of transcription: 'It is sometimes convenient in the practical teaching of languages to use transcriptions which are to some extent "narrowed", by the addition of letters or marks representing special members of phonemes' (*ibid.*). The fact that it is 'desirable to pass on to broadly transcribed ... texts as soon as the learner has a fairly clear idea of the situations in which the [variants] are used' (*ibid.*:220–1) does not mean that (2) is best attained by a broad transcription; as soon as the learner has this 'fairly clear idea', we can say that (2) has, strictly speaking, been attained already.

2.3 *The Phoneme*

Jones summarises different approaches to the phoneme under four headings:

1. The 'psychological' (1944:122) or 'mentalistic' (1962:212–15) approach; 'a phoneme is a single "abstract sound" or "sound image", which the speaker is capable of bringing to mind at will, and which he (subconsciously) endeavours to manifest concretely when he speaks. In some phonetic contexts he succeeds in giving accurate concrete expression to the "sound image", but in other phonetic contexts he fails to do so, and utters a sound resembling though not identical with the sound aimed at' (1962:212–13). This was the approach of Baudouin de Courtenay; according to Jones, Sapir also held this view, while Trubetzkoy's position was mentalistic in his earlier work. 'Personally', says Jones, 'I feel drawn towards this view, but I find it difficult to work with in practice' (1944:122).

2. The 'functional' view (1962:215–16); 'the phoneme cannot be described in terms of the sounds by which it is manifested', but only 'by reference to its function in the structure of language' (*ibid.*:215). For Trubetzkoy a phoneme was 'the sum of the phonologically relevant features of the "Lautgebilde"' (1939:35 — the translation is by Jones, who was not quite certain what 'Lautgebilde' meant); part of the definition of the phoneme was that substitution of one phoneme for another within a word would change the meaning of that word. Bloomfield took a similar view.

3. The 'physical' view (1944:122; 1957:7–9); 'a phoneme is a family of sounds in a given language which are related in character and are used in such a way that no one member ever occurs in a word in the same phonetic context as any other member' (Jones 1962:10). This type of definition is said to be more objective, and to provide a method in difficult cases for selecting the phoneme to which a given sound is to belong; its main advantage appears to be that it gives 'valuable results in practical language teaching and in connexion with the construction of systems of alphabetic writing' (*ibid.*:11).

4. The 'abstract' view; W.F. Twaddell 'considers that phonemes ... are merely "abstractional fictitious units" — whatever that may mean' (Jones 1944:122). Jones (1962:216) also associates Hjelmslev with this approach (cf. below, §4).

Several points in the 'physical' definition given above give rise to further discussion (page references are to Jones 1962 except where otherwise indicated):

a) 'a given language' is to be taken to mean 'the speech of one individual pronouncing in a definite and consistent style' (:9), where 'the style referred to ... is a consistent use of the forms of natural, unstudied but reasonable and not rapid conversation' (*ibid.*). 'Erratic pronunciation cannot be reduced to phonemes' (:48), but the criteria for what is 'consistent style' and what is 'erratic pronunciation' are nowhere stated. Furthermore, many people who 'speak the same "language" as the term is commonly understood' (:9 fn. 4) nevertheless 'speak in ways differing considerably from each other — [they] use different sounds, or ... use sounds in such a way that a different phonemic classification is called for' (:9). These 'different sounds' are called DIA-

PHONES (:195); Jones treats them at some length, but only 'in order to make clear the distinction between diaphones and the allophones (members) of phonemes' (:203). The attempt 'to find a place for diaphones ... within the definition of the phoneme' (:203–4) is rejected; while conceding (:204) that 'it is conceivable that some sort of "mentalistic" definition [actually more like the "abstract" view given above — ECF] of a phoneme could be devised which would include diaphonic variants', Jones regards the obstacles to such a course as insuperable. He concludes (*ibid.*) that 'the idea of the diaphone is of limited application only, and cannot like the idea of the phoneme be elaborated into a complete and universal theory applicable to all consistent types of speech'. Jones's theory thus cannot account for the fact (very important, surely, from a linguistic point of view) that people can communicate with others whose speech is phonetically very different, provided these others are speakers of 'the same "language" as the term is commonly understood': this probably does not affect the usefulness of Jones's phoneme as a transcriptional device, but must cast considerable doubt on his assertion (1957:15) that 'phonemes are of necessity units of linguistic structure'.

b) 'related in character' refers to the requirement of phonetic similarity, and may refer to acoustic or articulatory relationship; this requirement 'is of necessity vague, since it is impossible to specify what degree of dissimilarity will prevent two sounds from belonging to a single phoneme' (:10). On the one hand there are examples like the following: (1) 'Sounds so different as i and z occasionally occur as members of the same phoneme. This is found in Cantonese and other types of Chinese, where the i-phoneme following s has the value of a kind of z.' (:87); (ii) 'The s-phoneme of Spanish, as spoken in Buenos Aires, comprises a number of sounds ... A sound of the s-type is used before vowels, but before another consonant we find h, varieties of ç and x, m̥ and l̥ ...' (:32); (iii) 'If ... I were called upon to teach the pronunciation of a type of German in which x and ç belonged to a single phoneme, I should feel disposed to narrow the transcription by using the two symbols [x] and [ç]. I should do this on the ground that [ç] is very unlike [x] in sound ...' (:221). But on the other hand, h and ŋ in English 'are so remote from each other that it would obviously be absurd to consider them as members of one phoneme' (:10); although one is voiced and the other voiceless, from the point of view of place of articulation they are surely a good deal closer than h and m̥ (see above). Spang-Hanssen's comment seems apposite: '"Phonetic similarity" is ... hardly to be conceived as an intrinsic quality of phonetic substance, but seems to be a more or less conventional set of criteria very much influenced by linguistic form' (1961:159); in the case of English h and ŋ the influence would arise from the possibility of assigning ŋ in the sequence ŋk to the phoneme n, and other instances to the phoneme sequence ng.

In allocating sounds to phonemes, an extension of the 'related in character' principle appears to operate: if a sound is more phonetically similar to the principal member of phoneme A than to that of phoneme B, it should normally be assigned to phoneme A; for examples see pp. 43–4, 55–61. There are exceptions, such as cases where phonetic variation can be accounted for in terms of assimilation of the type which Jones called

'similitude' (e.g. p. 43), or where the principal member of one or more of the phonemes concerned is not 'intermediate between extreme members' (:8) (see e.g. p. 62).

'Related in character' often appears to refer to transcriptional similarity rather than phonetic similarity: Jones appears surprised that Japanese speakers associate syllabic ɱ in their language with the syllabic nasal (which varies between ŋ and ỹ) rather than with non-syllabic m (:88–9).

It is noteworthy that the 'related in character' requirement is not applied by Jones to tonemic groupings; on this point see below, §2.4.

c) 'in a word' is held to be an important restriction, on the grounds that 'to extend the definition to cover word-groups or sentences would ... at the best ... increase the number of phonemes in some languages; it might even be found to render the elaboration of any consistent theory of phonemes impossible, since variations of sound at word junctions may take so many forms' (:10). Again, this requirement is excluded from the criteria for tonemic groupings.

d) '"phonetic context" of a sound is to be understood to mean the sounds next to it or near it in the sequence of which it is a part, together with its duration (length), stress and (if voiced) voice-pitch' (:9). It includes the placing of syllable-boundaries (:32–3, 69), but theoretically should exclude morpheme-boundaries, though it is stated that knowing where the beginnings and ends of syllables are is 'sometimes a question of knowing whether a certain sequence of sounds is or is not a prefix or a suffix' (:69, see also §2.6(a)).

e) The definition contains no reference to meaning: 'Any reference to meaning is out of place in a physical definition of the phoneme. It is incumbent on us to distinguish between what phonemes *are* and what they *do*.' (Jones 1957:15). The semantic function of the phoneme is not a PART of its definition, but a COROLLARY of it (1962:14).

A further important requirement is that of bi-uniqueness: 'it is to be taken as axiomatic that one sound cannot belong to two phonemes of a language' (:11); however, overlapping of phonemes in different contexts is permitted (:92–8), since it 'does not interfere with phonemic grouping' (:95). Overlapping in the same context is in principle inadmissible, but 'very rarely ... instances may occur where a certain justification can be found for assigning a sound to two phonemes. These exceptional cases are where strict adherence to the ordinary principles of phonemic grouping would lead to inconvenience in morphology, or would obscure unnecessarily the relationships between words' (:98–9). It ought to be stated quite clearly that such cases are by no means rare: certain quite widespread types of what the Prague School terminology calls 'neutralization' (see above, §1.3) and what glossematics calls 'syncretism' (see below, §4.7(b)) fit these criteria perfectly, for example:

(i) Word-final stops in German must be phonetically voiceless. Thus to the genitive [bundəs] (*Bundes*) corresponds the nominative [bunt] (*Bund*); homophonous with this last is the uninflected adjective *bunt*, whose inflected forms include [buntəs] (*buntes*). Word final [t] could with great advantage be regarded as 'di-phonemic' in

this case (assignable sometimes to /t/ and sometimes to /d/, cf. the orthographic representations).

(ii) Cases discussed by Jones under the heading of 'Sounds occurring "incidentally" as well as "expressly"', e.g. Hindustani [ẽ] after a nasal consonant is sometimes assignable to /e/ and sometimes to /ẽ/; 'the words in which [assignment to /e/] is necessary can often be recognized by analogy (as when the sound denotes the suffix -e and not the suffix -ẽ), or they may be ascertained by asking a Hindustani-speaking Indian to pronounce slowly, in which case the incidental nasalization [i.e. the nasalization of /e/] is with some speakers not complete' (:99–100).

(iii) Cases discussed by Jones (:100–6) under the heading 'Sounds assignable to either of two phonemes', i.e. where the sounds in question are not identical with any realization of either of the two phonemes in question. Here 'it is always possible to assign [such sounds] arbitrarily to one of the phonemes, and as a rule this is probably the best course' (:106).

2.4 *The Toneme*

As stated above (§2.1), the extension of the phoneme idea to phenomena of tone is particularly associated with the name of Beach (1924, 1938). Although the principles of tonemic grouping are very similar in many ways to those of phonemic grouping, there are some very significant differences; to study these it is useful to take the following definition as a starting-point (page references are to Jones 1962): a toneme is 'a family of tones in a given tone language which count for linguistic purposes as if they were one and the same, the differences being due to tonal or other context' (:153).

a) There is no restriction to OCCURRENCE WITHIN A WORD in this definition: in many tone languages the tonal variants are found only in longer stretches. The multifarious 'variations of sound at word junctions' (:10 — see above, §2.3) threatened to undermine the phoneme theory, and it might well be asked whether the same will not be true of the toneme theory, if we admit tonal variants of this type. The fact that no such complication results appears to be largely due to the fundamental difference discussed in the next paragraph.

b) 'There is ... a great deal of "overlapping" in tones. For example, the same actual mid pitch may stand for a high toneme in one tonal context and for a low toneme in another' (:153). It should be pointed out that it is by no means unusual for tonal overlapping to take place in THE SAME tonal context. Thus in Hokkien two of the tonemes are realized by a low level pitch in phrase-final position (which includes isolation) while having two quite distinct realizations in other positions (Tay 1968: 55–6): *si*^{3} 'four' and *si*^{7} 'is' are homophonous phrase-finally, so that there is ambiguity in cases like:

i kɔŋ si [¯/ _] 'he said "four"'
and *i kɔŋ si* [¯/ _] 'he said "yes"'

but not in cases like:

si^{3} *tsap* [╲╱] 'forty'
si^{7} *tsap* [_╱] 'it is ten'

c) Tones which are members of the same toneme are not required to be phonetically similar — this requirement is replaced by the specification 'which count for linguistic purposes as if they were one and the same'. This presumably would include grammatical and lexical identity of items: thus the pitch pattern of *si* in *i kɔŋ si* 'he said "four"' would be assigned to the same toneme as the pitch pattern of *si* in *si tsap* 'forty' (because *si* represents the same lexical item in each case) and not to the same toneme as the pitch pattern of *si* in *si tsap* 'it is ten', although the latter is phonetically identical with it. This principle is more than once rejected by Jones in the context of phonemes: 'the fact that [bɐ̨ti:z] (*bêtise*) may be supposed to be a derivative of a root form [bɛ:t] (*bête*) does not provide a reason for assigning the [ɐ̨] to the ɛ-phoneme. This is simply a case where a derived form is said with a phoneme different from that of the root form' (1962:65–6).

d) The actual phrase 'tonal or other context' does not exclude the possibility of taking syntactic considerations into account when grouping tones into tonemes. If this were allowable, Jones's example of tonal lowering in Tswana (:156–8) could be easily handled tonemically, since 'the points at which the lowerings take place appear to be prescribed solely by syntactical considerations' (:156). However he concludes that 'the only way in which such a tonal usage could be brought into a tonemic classification would be to distinguish two kinds of high tone. These would be identical in actual tonal value, but one would involve a lowering of a subsequent high tone, whereas the other would have no effect on succeeding tones' (:157–8). The subsequent paragraph suggests that Jones considers this descriptive situation to be inconvenient, perhaps impossible.

2.5 *Stress and Prominence*

These are distinguished by Jones as follows: 'Force of utterance, abstracted from the other attributes of speech-sounds, is termed *stress*. Stresses are essentially subjective activities of the speaker' (:134); 'Prominence is an effect perceived objectively by the hearer' (:137). Prominence is sometimes due to stress, but can also be effected by vowel quality (open vowels being more prominent than close), length, pitch (rising and falling pitches being more prominent than level ones), or by combinations of these (:138–43). In fact these last are probably more important than stress as markers of accented syllables within an utterance (see below, §6.4).

2.6 *Sample Analyses*

a) *German* [x] *and* [ç] (Jones 1962:68–9)

These two sounds are normally found under the following conditions:

1. [x] only after (long or short) /a/, /o/ or /u/ in the same syllable.
2. [ç] in all other positions, including after /a/, /o/ or /u/ when a syllable-boundary intervenes.

It is thus possible 'to group [ç] and [x] into a single phoneme if we know where the beginnings and ends of syllables are' (:69); but this knowledge is 'sometimes a question of knowing whether a certain sequence of sounds is or is not a prefix or a suffix' (*ibid.*). Now this is a question of MORPHEME-boundaries, not SYLLABLE-boundaries (the [x] of ['rauxən] and the [ç] of ['frauçən] are surely no different in syllabic position), and there is no reason why the two should coincide (Fudge 1969b). We are faced with a choice: either we exclude position of morpheme-boundaries from consideration as being a non-phonetic factor (and we must then distinguish two phonemes /x/ and /ç/ on the grounds of such near minimal pairs as ['rauxən] and ['frauçən]), or we allow non-phonetic factors to influence phonemic grouping. Significantly it is the latter which agrees with both native intuition and the orthography; furthermore with this approach [va'xolder] (*Wacholder*, 'juniper'), in which Jones says the [x] appears to begin a syllable, ceases to be a problem, since there is no morpheme-boundary at the place in question.

b) *Vowel quality and hard and soft consonants in Russian* (Jones 1962:25–8, 50–2, 164–5)

Concomitant with the distinction between hard (non-palatalized) and soft (palatalized) consonants in Russian are some wide variations in vowel quality. There are two ways of handling this situation phonemically:

(i) Treat the vowel differences as significant and the consonant alternations as conditioned; the orthography (which represents the phonetic situation of an earlier stage of the language) adopts this solution — two sets of vowels are represented (и/ы, я/а, etc.), and palatalized final consonants are represented as consonant + ь (where ь was once a 'palatalized' phonetic vowel).

(ii) Treat the consonant differences as significant and the vowel alternations as conditioned; this is the solution adopted by Jones since corresponding hard and soft consonants 'are as a rule quite distinct in sound from each other and the qualities of their essential parts are invariable' (:26) whereas the distinctions between the various members of the vowel phonemes are much less clear-cut. There is also the advantage that final consonants can be handled much more elegantly; there is no need to postulate an unpronounced 'palatalized' vowel after every such consonant (a vowel which has no other raison d'être).

Representing palatalized consonants by consonant + j, the words which are phone-

tically [bi—l] 'was', [bi+lj] 'a true fact', [bjil] 'he beats', and [bji'lj] 'parliamentary bill' have the phonemic forms /bil/, /bilj/, /bjil/, and /bjilj/ respectively.

This analysis should be compared with the 'prosodic' approach to the same phenomena suggested by Robins (1957b:5) — cf. §3.5(a).

3. PROSODIC PHONOLOGY

3.1 *Historical Background*

On his return from India in 1928, J.R. Firth was appointed to the Department of Phonetics in University College, London, where he worked under Daniel Jones till 1938; in that year he moved to the School of Oriental and African Studies, where in 1944 he was appointed to Britain's first chair of Linguistics. Although he published no detailed and comprehensive treatment of his linguistic approach, and the articles he did publish (see Firth 1957c for a representative collection) were not always clearly written, his influence on British linguistics was enormous:

> Firth as a teacher and colleague was unmatched, and all those who studied under his direction or worked with him owe to him many original insights into the working of language in human society and into the place of linguistics within the sciences of man (Bazell et al. 1966:vi).

Although it is probably true to say, with Langendoen (1968:5) that 'in his earliest papers in the early 1930s he propounded essentially orthodox Daniel Jones phonemics', it is much more illuminating to regard his position as being to a large extent a reaction against the views of Jones. Only if we bear this in mind can we fully understand passages such as the following:

> If you limit the alternants to those you can differentiate absolutely by direct hearing, or by the technique of the phonetic amanuensis, you may serve all practical teaching purposes, but not those of systematic linguistic research (1934; 1957c:4); By allowing language to use phonetics instead of phonetics using language, we can get nearer a phonetic technique which will not merely show how a language should be pronounced, but also how the sounds and sound-attributes are used (*ibid.*:6); A number of theoretical difficulties in phonetics are due to the fact that the analysis of the living voice does not necessarily correspond to the letters of the roman alphabet serially employed to represent it. Philologists of the older school have often been charged with studying letters and typography, not language. And precisely the same charge may be brought against some phoneticians. Only the letters and types are different (1935; 1957c:22).

In the papers of this period there are occasional indications of Firth's later ideas in embryo. For instance we may see the germ of the distinction between phonematic units and prosodies (below, §3.4) in the following: 'Sounds may be analysed in several ways. I propose to analyse a "sound" into (1) articulation or articulations and (2) general attributes or correlations such as length, stress, tone, voice, associated with articulations, and having function' (1935, 1957c:21). Again, Firth later refused to

identify a member of one system with a phonetically similar member of another system with a different number of members; with this we might compare the following: 'Consonant groups, such as st, str, sp, spl, sk, skr, in initial position in English, are best regarded as group substituents, and no attempt should be made to identify the function of the letter "t" (here part of a digraph or trigraph) with that of a similar letter used in another context' (1936, 1957c:73).

Among the early works, Firth and Rogers 1937 deserves notice as the only sustained treatment of linguistic data in this period, and one of the very few that Firth ever produced. A feature of it is the postulation of a syllable structure: '... it will be found convenient to regard the Hunanese monosyllable as having one, two, or perhaps three places [the different numbers being to account for syllables with zero in initial and/or final place — ECF] in which the phonetic diacritica may be said to occur' (Firth 1957c:80). Furthermore it is no longer merely features of stress and tone which are held to operate over the syllable as a whole: 'The tonal diacritica and possibly also what we have called yotization and labio-velarization may be considered as syllabic features' (*ibid.*): a further step towards the fully-fledged prosodic approach.

Firth himself (1959:29) sets the beginning of prosodic phonology proper at 'about 1943', while the first published account of the new theory is Firth 1948. Between then and 1960, Bursill-Hall (1961:186–91) has listed about one hundred books and papers applying and extending Firth's ideas, and this total continues to increase.

Firth's own writings are difficult; the clearest general treatments of prosodic phonology are probably Robins 1957b, 1963, 1964; Palmer 1970 is a valuable set of readings. Hill 1966 sets out to meet the need for a pedagogical introduction, and in spite of the limitations of which the author is aware (:198–9) succeeds to a certain extent: it will introduce the reader to some of the characteristic features of prosodic phonology, but will not introduce him very far — one advantage of this is that it steers clear of some of the excesses of the orthodox Firthian position (cf. 222). Among studies of particular languages, Scott 1956, Allen 1957 and Lyons 1962 offer the advantage of a comparison of prosodic phonology with other approaches; Henderson 1949 and Allen 1951 are valuble pioneering studies; other studies worth special mention are Allen 1956, Bendor-Samuel 1961, 1962, Henderson 1966, Palmer 1955, 1957, Robins 1957a, Waterson 1956.

3.2 *Philosophical Background*

Firth described his approach as 'monistic' (1957b:2), and frequently reiterated his unwillingness to base his thought on dichotomies which are difficult if not impossible to demonstrate; he was also concerned with describing language as a meaningful activity in a social context. Both aspects of his thought are illustrated by the following: 'As we know so little about mind and as our study is essentially social, I shall cease to respect the duality of mind and body, thought and word, and be satisfied with the

whole man, thinking and acting as a whole, in association with his fellows' (1935:53, 1957c:19). But (1951, 1957c:192) in avoiding such dichotomies, he was 'not to be taken to exclude the concept of mind, or to imply an embracing of materialism to avoid a foolish bogey of mentalism'.

There were no such things for Firth as 'brute facts': 'It is unnecessary to assume any "facts" prior to statement. No fact is merely itself so to speak. ... An isolate is always an abstraction from the language complex which is itself abstracted from the mush of general goings-on. The notion of a mere fact is the product of the abstractive intellect.' (1957b:29); with this we may compare the epigraph to the same paper — a quotation from Goethe: 'Das Höchste wäre zu begreifen, das alles Faktische schon Theorie ist.'

The philosophical status of terms like PHONEME which occur in descriptions of languages has been viewed differently by different linguists:

> During the development of the phoneme theories, considerable discussion took place on the status of the phoneme as an analytical term, on the classical lines of the philosophical disputes between realists, conceptualists, and nominalists. According to the realist view espoused by Daniel Jones and others ..., the phoneme has actual existence as an 'abstract sound' or structural entity in the language to which it belongs; on the conceptualist view, favoured by Trubetzkoy for a time ..., the phoneme is a mental entity or conception as against the sound, which is a physiological and acoustic entity. The nominalist attitude, in contrast to both the above viewpoints, is that the phoneme, like any other element of scientific analysis, is no more than an appropriate term or operational fiction, with which to handle the mass of observations and to make orderly statements about the gross data, in the case of phonetics, the sounds of a language. ... existence or reality are not properly predictable of anything other than the actual phenomena or data under observation (Robins 1957b:2).

The test of an analysis of a language is not, therefore, that its terms and categories correspond with anything pre-existing in utterances of that language or in its speakers, but whether it 'comprehensively and economically explains what is heard (or read) in the language, and "renews connection" with further experience of it' (*ibid.*:3). ('Renewal of connection', a favourite term of Firth's (cf. 1957b:passim, 1959:29), refers to the capacity of an adequate description to account for the form of new utterances (Robins 1963:21).) Thus 'there is no suggestion that phonemic analysis is wrong, invalid or untrue... or inapplicable or unhelpful. ... But phonological analysis need not stop at or be based on phonemic transcription' (*ibid.*). As Haas points out, there has often been the impression that there is a 'conflict between Firthian "prosodic" analysis, on the one hand, and phonemic analysis, on the other, when in fact the two are not only compatible but complementary' (1966:146 fn. 45).

One consequence of a nominalist approach is that the order of elements in a DESCRIPTION does not need to parallel any segmentation of the STREAM OF SPEECH: 'The phonological structure of the sentence and the words which comprise it are to be expressed as a plurality of systems of interrelated phonematic and prosodic categories. Such systems and categories are not necessarily linear and certainly cannot bear direct relations to successive fractions or segments of the time-track of instances of speech.

By their very nature they are abstractions from such time-track items. Their order and interrelations are not chronological' (Firth 1948, 1957c:137).

However, it is on this very point that the professed thorough-going nominalism of Firthians often breaks down: Robins, for instance, criticizes the treatment of Russian palatalized and non-palatalized consonants in Jones 1962 (:25–8, 50–2, 164–5) (see §2.6(b) above) as follows: 'Any phonemic analysis of Russian, it would appear, must recognize as phonemic the difference between the two sets of consonants in that language; this being so, the concomitant differences in the quality of adjacent vowels will necessarily be non-distinctive phonemically. But we are told that the difference between a palatalized and a non-palatalized consonant is in many words easier to recognise by the difference in the adjacent vowel than in the consonant itself. Thus we are involved in listening to the non-distinctive or irrelevant feature in order to catch what is distinctive or relevant' (1957b:5). While this might be taken as an argument in favour of a nominalist phonemics rather than a realist phonemics, it is quite irrelevant to the question of whether prosodic analysis is superior to phonemics as a descriptive system (in fact in this instance the reverse is the case: see below §3.5(a)). The Firthians' objection to all use of the concept of assimilation in synchronic description (see below §3.4(b)) is a more general example of the same confusion.

3.3 *Firth's Linguistic Theory*

'The main concern of descriptive linguistics is to make statements of meaning' (Firth 1951, 1957c:190); it must be pointed out that Firth used the word MEANING in a somewhat idiosyncratic sense — 'meaning ... is to be regarded as a complex of contextual relations, and phonetics, grammar, lexicography, and semantics each handles its own components of the complex in its appropriate context' (1935, 1957c:19). Langendoen (1968:40) asserts that 'Firth defined "meaning" as the relationship between an element at any level and its context on that level', but the term would appear to include more, i.e. the implications of an element or sequence of elements on the situational level: 'In previous discussion of the phonological mode of meaning, I invented a word, *phonaesthetic*, to describe *the association of sounds and personal and social attitudes* [these last italics are mine, the others Firth's — ECF], to avoid the misleading implications of *onomatopoeia* and the fallacy of sound symbolism' (1951, 1957c:194).

> To make statements of meaning in terms of linguistics, we may accept the language event as a whole, and then deal with it at various levels, sometimes in a descending order, beginning with social context and proceeding through syntax and vocabulary to phonology and even phonetics, and at other times in the opposite order ... (Firth 1951, 1957c:192). Studies at one level must take into account findings at other levels. In all phonological statements, for example, it is always useful, and I would suggest even necessary, to have studied the grammatical meaning of the materials ... (1957b:23).

Two main sets of relations are set up, each divided into two types (Firth 1957b:5):

1. Interior relations connected with the text.

a) Syntagmatic relations between elements of STRUCTURE at various levels, e.g. grammatical, phonological;

b) Paradigmatic relations of terms within SYSTEMS; each element of structure must be filled by one such term — the system is defined as the set of terms from which this term is selected.

2. Situational relations (of no further relevance for this study).

a) Relations wholly within the context of situation;

b) Relations set up between parts of the text and aspects of the situation.

We will conclude this section by quoting (Firth 1957a:vi-vii) 'a brief summary of some of the key or pivotal words and phrases which recur' in Firthian descriptions; comments on certain points arising from this summary will form the basis of our exposition of the phonological theory in §3.4.

(i) The raw material is referred to as the phonic material. From such phonic material, phonic data are selected which may be described and recorded as percepta by the techniques of phonetics. Selected phonic data, phonetically described, are allotted to *phonematic* and *prosodic* categories, distributed in units, terms, classes, structures, and systems.

(ii) A fundamental distinction is made between *structures* with their *elements* which are syntagmatic, and *systems* of *units* or *terms* which *commute* and provide values for the elements.

(iii) The theory of *exponents*, linking the phonic data phonetically described with *categories* of phonology and grammar, is a central necessity of linguistic analysis at congruent levels.

(iv) A number of levels of notation are used and attention is drawn to the following: impressionistic phonetic notation of selected percepta from the phonic data, generalized phonetic notation, reading transcription, transliteration, generalized phonological notations including formulaic notation, and orthographies.

3.4 *Prosodic Phonology*

On paragraph (i) above we make the following comments:

a) 'The techniques of phonetics' — on Firth's views of the place of phonetics in linguistics, see below, §5.3.

b) '*Phonematic* and *prosodic* categories' — in addition to the traditional prosodies (length, stress, voice-pitch) the prosodic categories include any phonic material that belongs to structures longer than single segments. Robins distinguishes two types of prosodic element. The first consists of features that 'may be spread or realized phonetically over a structure, such as a syllable, as a whole' (1957b:4), and in addition to stress, pitch and length includes 'nasalization, in languages in which a nasal consonant is always followed by a nasalized vowel and a nasalized vowel is found only after a nasal consonant, and palatalization and velarization, when front or palatally articulated consonants are associated in the syllable with front type vowels and back type consonants with back articulated vowels' (*ibid.*); vowel harmony in Turkish is best

treated as a prosody of the word. The second type of prosodic element consists of those whose phonetic realizations do not spread over the whole of a structure (in fact may be confined to a single element) but 'which nevertheless serve to delimit it, wholly or partly, from preceding and following structures, thus entering into syntagmatic relations with what goes before or after in the stream of speech' (*ibid.*: 5); thus since in English no word has more than one full stress, we may say that the DOMAIN of stress in English is the word — while since that stress is phonetically realized on one particular syllable, or part of it, we say that its FOCUS is that particular syllable.

To phonematic units are allotted 'only such data as are not involved in such constant [syntagmatic] relations; thus the phonematic units have exponents which are appropriate to their several places in structure, and are devoid of syntagmatic implications' (Allen 1957: 69). Thus the context-sensitive rules for specifying the realization of a phoneme in a given position are eliminated from a prosodic description; the phonematic units have constant exponents, and the variations are handled by prosodies operating over the sequence of phonematic units concerned (see sample analysis, §3.5(a)). Two advantages are claimed for this type of analysis: 'I. that the Prosodic approach disposes of the need to make use of the suspect concept of assimilation; II. that it further renders possible the symbolization of a given lexical item by a single phonological formula, no small lexical and grammatical advantage' (Sprigg 1957: 105–6 — the third advantage cited there is not of general relevance but refers to specific features of Burmese).

Assimilation is to be excluded on the ground that 'synchronic description and analysis should as far as possible avoid the use, even metaphorically, of terms and concepts more appropriate to the diachronic study of the history and development of languages and linguistic features' (Robins 1957b: 6). Types of assimilation involving 'action at a distance' are held to be particularly objectionable: 'It is an unsuitable metaphor to say that one sound operates at a distance over intervening sounds to exert a force on another sound, and change it from something which in fact it never was (in the words concerned) into something else' (*ibid.*). As it stands, this is indeed an unsuitable metaphor — sounds as observable entities occurring in the stream of speech ought not to be said to do such things. However, if the term SOUND is replaced by PHONETIC EXPONENT OF A PHONOLOGICAL CATEGORY, then the force spoken of will be exerted entirely within the system of descriptive constructs, in which 'order and interrelations are not chronological' (see above §3.2): thus no nominalist need be worried by this situation.

c) 'Units, terms, classes, structures, and systems' — see paragraph (ii).

Comments on paragraph (ii):

d) 'Structures' — on the phonological level the basic structure is the syllable: '... all utterance is considered among other things to be in terms of syllabic structure, though no general definition of syllable is either implied or indeed possible. Syllabic structures are prosodic as such, and further prosodic features may be referred to them' (Firth 1957b: 31). There are then larger structures consisting of an integral number of

syllables, each with prosodies of various kinds associated with them: thus Henderson 1949 lists the following prosodic and phonematic elements (quoted from Robins 1957b:4):

> Sentence Prosody: Intonation;
> Prosodies of Sentence pieces: Length Stress and Tone relations between component syllables;
> Syllable Prosodies: Length, Tone, Stress, Palatalization, Labiovelarization;
> Prosodies of Syllable Parts: Aspiration, Retroflexion, Plosion, Unexploded closure.
> Phonematic Consonant and Vowel units, in such classes as Velar, Dental, Bilabial, Nasal, Front, Back, Rounded, Unrounded.

e) 'Systems' — the Firthian approach is POLYSYSTEMIC. Associated with each element of structure is a system which may be distinct from systems associated with other elements of structure: thus the system of possible initial consonants in Chinese is very different from the system of possible finals (cf. Firth and Rogers 1937). Again, the system associated with an element of structure may vary from one type of structure to another: thus the system of possible vowels in word-final open syllables in English contains fewer elements than the corresponding system for closed syllables. Systems applicable to loanwords may be different from those applying to native words in a language: Henderson (1951:132 fn. 4) recognizes 'upwards of a dozen' systems and subsystems for Siamese.

Comments on paragraph (iii):

f) 'Categories' — the abstract entities (constructs) of linguistic description.

g) 'Exponents' — the EXPONENT of a category is the part of the phonic material which is stated in the description to correspond to that category. For a detailed exemplification see Allen 1957:75–8. The requirement of 'bi-uniqueness' is not insisted on:

> ... providing there are sufficiently cogent linguistic reasons for postulating different elements of phonological structure in a given case, the phonetic exponents of such elements may sometimes converge in what is, from the point of view of general phonetic description, an identical complex of phonetic features (Henderson 1966:179).

3.5 *Sample Analyses*

a) *Vowel quality and hard and soft consonants in Russian* (cf. §2.6(b) above)

As stated in §3.2 above, Robins (1957b:5) proposed an analysis of Russian in which palatalization is a prosody of the syllable. This analysis would work well in a language in which all syllables had the form CV; in such a system the syllables [dja], [dɑ] would have the phonological representations

P__ N__
d a and d a

respectively, where P represents a prosody of palatalization and N the corresponding term non-palatalization, and the line represents the fact that each has the whole syllable as its domain.

However, the fact that Russian has CVC syllables with a choice of palatalization or non-palatalization in the final place adds greatly to the complication: of the four words given in §2.6(b) above, [bi—l] 'was', [bi+lj] 'a true fact', [bjil] 'he beats', and [bji^{4}lj] 'parliamentary bill', the first will presumably correspond to

N____
b i l

and perhaps the last to

P____
b i l

but the two 'mixed' cases will not be representable in this way at all (unless we add two further prosodies to the system). Robins (*ibid.*) suggests that 'it is obviously necessary to differentiate, by the concept of Focus (cp. Allen 1951:943), or otherwise, palatalized syllables with initial palatalized consonants, those with final palatalized consonants, and those with both'. In other words, marking the focus of palatalization by f, [bi+lj], [bjil] and [bji^{4}lj] will be representable as

P____ P____ and P____
f f f f
b i l b i l b i l

respectively. However, EITHER the N vs. P contrast is now redundant, OR, since initial and final focus are independent of each other, we are no longer dealing with a SYLLABLE-prosody, but with two prosodies, one of syllable initiality and the other of syllable finality, with N and P contrasting in each position. The four words will then be representable as

N___ N___ P___ and P___
N_ P_ N_ P_
b i l b i l b i l b i l

respectively. This notation is in no way superior to the Jones notation; it is in fact more complex, since we have prosodic units with a domain which is neither a syllable nor a phonematic unit, and this means two additional types of element.

b) *Gemination in Tigrinya* (Palmer 1957, cf. also 1955)

Certain nouns in Tigrinya form their plurals according to the formulae and examples given in Table 1 (transcription is IPA, and therefore differs from Palmer's at certain points). The values of V_3 may be predicted from those of V_1 (see Table 2) and those of V_4, V_5 from those of V_2 (Table 3). Most nouns have only one of the possible

TABLE 1

	Singular	Plural 1	Plural 2	
A.	$C_1V_1C_2C_3V_2C_4$	$C_1V_3C_2aC_3V_4C_4$	$C_1V_3C_2$ ɐ $C_3C_3V_4C_4$	
1.	kɐnfɐr	kɐnafɐr	kɐnɐffɐr	'lip'
2.	kɐnjɐr	kɐnajɐr	kɐnɐjjɐr	'small tin'
3.	mɐnfit	mɐnafit	mɐnɐffit	'sieve'
4.	kɐrbit	kɐrabit	kɐrɐbbit	'match'
5.	sanbuʔ	sanabuʔ	sanɐbbuʔ	'lung'
6.	t'ɐrmuz	t'ɐramuz	t'ɐrɐmmuz	'bottle'
B.	$C_1V_1C_2C_3V_2$	$C_1V_3C_2aC_3V_5$	$C_1V_3C_2$ ɐ $C_3C_3V_5$	
7.	jalba	jalabu	jalɐbbu	'boat'
8.	sanda	sanadu	sanɐddu	'friend'
9.	manka	manaku	manɐkku	'spoon'
10.	dɐmmu	dɐmamu	—	'cat'
11.	mɐlso	mɐlasu	—	'kind of bread'
12.	sɐldi	sɐladi	—	'money'
13.	sɐrre	—	sɐrɐrri	'trousers'
C.	[At a superficial level these are anomalous]			
14.	mɐnbɐr	mɐnaβɐr	mɐnɐbɐr	'seat'
15.	mɐnkɐs	mɐnaxɐs	mɐnɐkɐs	'chin'
16.	mɐndɐk'	mɐnadɐk'	mɐnɐɖɐk'	'wall'
17.	nɐgus	nɐgawɐs	nɐgɐwwɐs	'king'
18.	ʔɐton	ʔatawɐn	—	'oven'
19.	mɐdid	mɐdayɐd	—	'grindstone'

plural forms, but there are a few which allow both as alternatives — it is mainly on these cases that the study is based.

The exponents of C_2C_3 in singular forms may be identical to those of C_3C_3 in plural 2 forms (compare [dɐmmu] 'cat' (item 10) with [t'ɐrɐmmuz] 'bottles' (item 6)), but the former are (special cases of) CLUSTERS, and only the latter are GEMINATIONS (1957: 140).

Plural 2 is characterized by the prosody of GEMINATION (symbolized G below), while plural 1 has the prosody of NON-GEMINATION (N). The focus of this prosody is at C_3 and the vowel preceding it, while its domain is the whole word (no other elements within the word can act as focus for G or N). Thus [kɐnafɐr] 'lips' has the phonological representation:

N———
|f|
kɐnɐfər

while plural 2 [kɐnɐffər] has the representation:

G———
|f|
kɐnɐfər

The general formulae can now be summed up as in Table 4.

For the vowel element v, N has the exponents [front, open], while G has the exponents [central, half-open]. For the consonant C_3, G has three possible exponents (1957:141):

(i) consonantal duration (phonetic gemination)
(ii) tenseness of articulation (plosion, as opposed to friction for N)
(iii) place of articulation.

Types (ii) and (iii) occur only in cases where V_4 has the exponent [ə] (i.e. [central, half-close]) (141–2): for the purposes of this summary we ignore the cases where the singular has the form CVCVCV (145–6). (ii) occurs in conjunction with phonematic units having exponents [voiced, bilabial] and [voiceless, velar]; see cases 14, 15 in Table 1. (iii) occurs in conjunction with phonematic units having exponents [voiceless,

TABLE 2

V_3 is subject to the further rule that ɐ has the same phonetic exponents as a in contact with glottals and pharyngals (cf. 18 in Table 1) in certain positions.

V_1	ə	ɐ	a
V_3	ɐ	ɐ	a

TABLE 3

V_2	i	e	ə	ɐ	a	o	u
V_4	i		ə	ə	ə		u
V_5	i	i			u	u	u

TABLE 4

Singular	Plural 1	Plural 2
	N_____	G_____
A. $C_1V_1C_2C_3V_2C_4$	$C_1V_3C_2vC_3V_4C_4$	$C_1V_3C_2vC_3V_4C_4$
	N_____	G_____
B. $C_1V_1C_2C_3V_2$	$C_1V_3C_2vC_3V_5$	$C_1V_3C_2vC_3V_5$

dental/interdental, plosive] and [voiced, dental/alveolar, plosive]; see case 16 in Table 1: in these cases G selects dental and N the other alternative.

Where V_4 has any other exponent than [ə], G has the exponent of phonetic gemination, and the phonematic units having exponents [voiced, bilabial] and [voiceless, velar] both have the additional exponent [plosive]. Thus [plosive] is in one case the exponent of the prosody G, and in the others it is one exponent of a phonematic unit.

(ii) and (iii) both occur with the element having exponents [ejective, velar/uvular] — G selects [velar] and adds the exponent [plosive], while N selects [uvular] and adds [affricate].

If Palmer were to allow the sequences of phonematic units shown in Table 5 to occur, and to have exponents as shown there, he would be in a position to make a further generalization — cases A, B, and C (Tables 1, 4) could all be covered by one formula (Table 6), and the statements of vowel correspondences shown in Table 3 would no longer be required. The class of words for which G has exponents (ii) and (iii) (see above) would need to be specified as those for which C_4 is not w, w + C, y, or y + C.

However, Palmer is presumably prevented from doing this by the requirement that phonematic units should have no syntagmatic relevance (Allen 1957:69 — quoted above, §3.4).

TABLE 5

After V, the sequences wə etc. are already permitted, and have exponents [wə] etc.

						< after C		>
Phonematic sequences	əy	ɐy	əw	ɐw	aw	wə	wɐ	yə
Exponents	[i]	[e]	[u]	[o]	[a]	[u]	[o]	[i]

TABLE 6

Singular $C_1V_1C_2C_3V_2C_4$	Plural 1 N $C_1V_3C_2vC_3əC_4$	Plural 2 G $C_1V_3C_2vC_3əC_4$
3. mɐnfəyt	mɐnafəyt	mɐnɐffəyt
5. sanbəw?	sanabəw?	sanɐbbəw?
7. jalbaw	jalabəw	jalɐbbəw
10. dəmməw	dɐmaməw	—
11. məlsɐw	mɐlasəw	—
12. sɐldəy	sɐladəy	—
13. sərrɐy	—	sɐrɐrrəy
17. nəgwəs	nɐgawəs	nɐgɐwwəs
18. ʔətwɐn	ʔatawən	—
19. mɐdyəd	mɐdayəd	—

4. GLOSSEMATICS

4.1 *History of Glossematics*

The term GLOSSEMATICS dates from 1935, when for the first time the Copenhagen group under Hjelmslev and Uldall presented a linguistic theory covering grammar and semantics as well as phonology. Prior to this, the broad outlines of the theory (with certain differences of emphasis) had appeared (Hjelmslev 1928), and four years' phonological work culminated in the presentation in 1935 of three short papers to the Second International Congress of Phonetic Sciences in London (Brøndal 1936, Hjelmslev 1936, Uldall 1936) outlining the new theory called PHONEMATICS. Brøndal argued that phonemes should be regarded as abstract entities, 'entirely different from, but inherent in, sounds' (:43). The Third International Congress of Phonetic Sciences in Ghent saw further phonological contributions by the group (Hjelmslev 1939; Uldall 1939); then in 1943 was published the fundamental work of glossematics *Omkring Sprogteoriens grundlaeggelse* (Hjelmslev 1943 — we shall quote this in the English translation, giving page references to the 1961 edition: from this point until the end of §4.6, all references consisting of page numbers alone are to this work). Outlines of Danish linguistics at this period are to be found in Fischer-Jørgensen 1949 and Togeby 1949, and the international interest in glossematics is reflected in the number of reviews of Hjelmslev 1943 which appeared. Further indication of European interest is given by the publication of *Recherches structurales* (Bodelsen et al. 1949), subtitled *Interventions dans le débat glossématique*. Among many critical works Siertsema 1955 is particularly important on the general theory, while Hintze 1949 and Coseriu 1954 (page references will be given to the more accessible 1962 version) pay particular attention to the question of form and substance on the phonological side. The first part of Hjelmslev and Uldall's projected *Outline of Glossematics* was ready in page proof as early as 1952, but the remaining parts were never completed, only the first part eventually being published (Uldall 1957). The philosophical background of the theory is discussed in Ungeheuer 1960, while Fischer-Jørgensen 1967 returns to the form-substance question in detail.

4.2 *Philosophical Background*

The glossematic approach was intended as a thoroughgoing attempt to re-shape linguistics as an exact science (Uldall 1957:1–18); this was taken to mean a science according to the conception of the Vienna Circle (logical positivism), which can be summarized (following Ungeheuer 1960:2–6) thus:

1. Antimetaphysical bias. Metaphysical sentences are not false but meaningless — the resemblance of their syntax to that of non-metaphysical sentences is a semantic snare.

2. Empirical basis. Originally, the meaning of a sentence was to be determined by its empirical verifiability. This led to contradictions, and therefore logical positivists

adopted the weaker position that science should account for as many empirical facts as possible by means of logical deduction from as few axioms (initial assumptions) as possible.

3. Emphasis on structural statements. Statements of content often deal with things which are not directly observable or communicable (such as colour perception); in such cases relational statements (e.g. comparing the colour perceptions of two individuals) are more appropriate.

4. Reduction of scientific language to an algebra. Uses of syntax typical of metaphysical sentences should be excluded from scientific discourse, and all terms should be unambiguously defined.

Each of these four characteristics influenced glossematics as follows:

1. The traditional difference between methods appropriate for the humanities and those for the sciences is questioned, and the argument that the 'human factor' in linguistics is too strong to permit it to be mechanical in operation is countered as follows: 'If two candles on the dining-table do not burn exactly alike ... it might, analogously, be inferred that the candle factor is too strong to permit physics and chemistry to be merely mechanical in operation' (Uldall 1957:2); it is easy to see how the 'candle factor' could be made explicit (structural differences in the candles, the influence of air-currents, etc.) — the possibility that the 'human factor' might similarly be reduced ought not to be discounted.

2. The analytic method of glossematics is characterized as 'empirical' (Hjelmslev 1961:11), by which is meant that it is a) self-consistent, b) exhaustive, and c) as simple as possible — in that order of importance. This appears to be a still weaker position than the later Vienna School conception of empiricism.

3. For the positivists, structural statements were a means to the end of achieving communicability and empirical verifiability, i.e. were important within the metalanguage (the language in which the scientific description of the phenomena was couched). Following Carnap (as summarized by Ungeheuer 1960:14), we could roughly define a structural description as follows: Two objects are ISOMORPHIC if they have the same formal structure (irrespective of any differences of nature or substance, however radical); a STRUCTURAL DESCRIPTION of a set of isomorphic objects is a description which is applicable to each object in the set, and which replaces features of the objects by empty variables. No claim was made that the objects being described were insubstantial. On the other hand, according to Ungeheuer (*ibid.*), the preference for structural statements was taken by glossematicians to mean that the structural description in terms of empty variables was the actual object of study: structural statements were needed, not as a prerequisite for an adequate metalanguage, but as a reflection of an abstractness which was inherent in the object of study — thus: 'To the scientific view the world does not consist of things, or even of "matter", but only of functions [i.e. approximately, relationships or dependences] between things, the things themselves being regarded merely as points in which functions meet' (Uldall 1957:8). 'The dependences, which naive realism regards as secondary, presupposing the objects,

become from this point of view primary, presupposed by their intersections' (Hjelmslev 1961:23). Ungeheuer (1960:14) finds this change of emphasis objectionable; it would appear, however, that his objections stand or fall with the hypothesis that the object of study of linguistics is as concrete as that of, say, physics or chemistry, (see below §4.3). On the other hand, the extreme glossematic position, which states that the objects, being secondary, have no influence on the structure of the system of dependences, is also open to question; we deal at greater length with this point below (§4.3).

4. In view of the primacy assigned to functions, we may well wonder with Ungeheuer (1960:18, 19) why the glossematicians attempted to evolve an algebra of their own when the relational calculus was ready to hand. In fact the glossematic algebra as formulated in the literature (notably in Uldall 1949 and 1957) contains several misunderstandings and we may agree with Ungeheuer (1960:19) that this is the weakest part of the theory.

4.3 *Form and Substance in Glossematics*

The Saussurean view of *langue* as a form linking two kinds of substance (phonic and conceptual) is basic in glossematics, though with the important modification that form is taken to be twofold as well as substance, resulting in the setting up of four strata (Uldall 1957:26):

a) Content-substance (roughly ideas)
b) Content-form (roughly syntactic and lexical structure)
c) Expression-form (roughly phonology)
d) Expression-substance (roughly phonetics)

Content and expression are on a footing of equality, each presupposing the other; they are linked by the sign function (Hjelmslev 1961:47–9).

On the other hand, substance presupposes form but not vice versa (:50, 75–81). The form-substance dichotomy is complicated by the fact that Saussure's 'substance' (which he describes as two'masses amorphes' — one phonetic and one semantic (1916: 155–7)) corresponds to Hjelmslev's 'purport' (:50); purport is transformed into substance by the operation of form upon it (:52). In the expression plane this implies that phonology is logically prior to phonetics, and that the latter has two aspects (i) the study of expression-purport (general phonetics) and (ii) the study of expression-substance (phonetics of a particular language). One sees readily that (i) is non-linguistic, but equally readily that (ii) is not. On the other hand, (ii) must be looked at as the study of boundaries arbitrarily laid down in a set of continua by the expression-form:

> An example is the continuum made by the median profile of the roof of the mouth, from the pharynx to the lips. In familiar languages this zone is usually divided into three areas, a back *k*-area, a middle *t*-area, and a front *p*-area ... Eskimo and Lettish, among others, distinguish two *k*-areas ... Many languages of India distinguish two *t*-areas, a retroflex and

a dental ... Another such obvious continuum is that of the vowel zone ... the characteristic thing is that each language lays down its boundaries within this infinity of possibilities (Hjelmslev 1961:55).

If form has this kind of independence and priority, then Hjelmslev concludes that:

just as the various special, non-linguistic sciences can and must undertake an analysis of the linguistic purport without considering the linguistic form, so linguistics can and must undertake an analysis of the linguistic form without considering the purport that can be ordered to it in both planes ... Linguistics must see its main task in establishing a science of the expression and a science of the content on an internal and functional basis; it must establish the science of the expression without having recourse to phonetic or phenomenological [i.e. speakers' conceptions of sounds — ECF] premises ... Such a linguistics ... would be one whose science of the expression is not a phonetics and whose science of the content is not a semantics. Such a science would be an algebra of language, operating with unnamed entities, i.e. arbitrarily named identities without natural designation, which would receive a motivated designation only on being confronted with the substance (Hjelmslev 1961:78–9).

These unnamed entities include a set of irreducible invariants called glossemes (:80) which is divided into two subsets, glossemes of expression or CENEMES, and glossemes of content or PLEREMES (Hjelmslev 1939:271–2). Cenemes correspond roughly to the Prague School's 'distinctive features' (though without the phonetic implications of these), and perhaps more closely to Householder's 'distributionally defined distinctive features' (1962:191). The (again non-phonetic) counterpart of the phoneme is the TAXEME OF EXPRESSION (:99); cenemes are the results of arranging the inventory of taxemes of expression into a system with several dimensions.

Glossematicians have always contended that expression form is independent of any substance, and in particular independent of sound: 'It is possible to replace the usual sound-and-gesture substance with any other that offers itself as appropriate under changed external circumstances. Thus the same linguistic form may also be manifested in writing ...' (:103). Moreover, speech is claimed to have no kind of primacy over writing and other possible substances: 'In my opinion it is illegitimate to consider either of them primary. They simply co-exist' (Uldall 1944:13). The many objections to this extreme formulation are usefully summarized by Siertsema (1955:99–120) and Coseriu (1962:174–210) in particular.

Hjelmslev's critics frequently misunderstood him as claiming that the forms of language should be DISCOVERED independently of the substance; this largely came about through a failure to distinguish between three different types of 'finding':

a) Finding the *actual forms* (the units and elements themselves) in actually existing languages to describe them algebraically afterwards, thus establishing their 'forms' in the glossematic sense.

b) Finding, out of these, by an 'algebraic' operation, the *possible 'forms'* to register all of them in a 'system'.

c) Finding, by confronting every particular language with this system, *which forms out of that system have been realized* in that particular language: which combinations out of the whole system occur in it.

That finding[b] and finding[c] are the ultimate end of glossematic theory has not been realized by many of Hjelmslev's critics (Siertsema 1955:23–4).

Certainly the commutation test (i.e. the repeated asking of the question 'does a certain change in the expression plane entail a change in the content plane, and vice versa?'), which is the glossematician's basic tool for discovery (finding[a]), involves reference to substance (Hjelmslev 1954:171); This must not, however, be confused with Hjelmslev's 'purely formal analysis' which 'is not meant as a preliminary linguistic operation, but as a final control of the results gained in this way by trial and error' (Fischer-Jørgensen 1952a:12 fn. 21). Siertsema says (1955:27) that 'there is nothing in the book (Hjelmslev 1943) to indicate that the method of analysis which we find described ... is not meant to substitute something better for other, already exisiting, methods of analysis, but on the contrary, presupposes those other methods and only wants to be the finishing touch to them'. One does in fact get the impression that in glossematic writings discovery (finding[a]) is often confused with verification (finding[c]), and that the latter is never properly distinguished from the method by which a finalized description should be presented.

The 'glossematic debate' of the 1940s and 1950s centred around the question of whether the formal structure of a language could be found[c] and described without substance entering into consideration. The glossematic position (an affirmative answer to this question) can be justified up to a certain point: it is perfectly possible and right to postulate non-phonetic taxemes of expression (phonemes), but this does not imply that their arrangement in a system (in other words the cenemes of which they consist) has no relation to substance. Certainly phonetic relationships may be overruled by morphological considerations:

> ... considerable importance is attached to the possibility of attaining a simpler description of inflexional and derivative paradigms ... by a suitable arrangement of the inventory of expression taxemes. ... The cases of alternation that occur frequently in paradigms may, at any rate for a part, be eliminated by a suitable arrangement of the inventory of the expression taxemes (Spang-Hanssen 1949:67; and compare the same author's Czech example given below, §4.7 (a); see also Fudge 1967:7–19).

Certainly, too, phonetic relationships may be overruled by considerations of syllabic structure (Fudge 1967:19–23). This kind of overruling implies LOGICAL PRIORITY for such considerations over phonetic relationships; however, this is not the same as COMPLETE INDEPENDENCE of phonetic relationships. The moment we confront these arbitrarily named cenemes with the substance (:79 — quoted above), we are implicitly defining the former, at least partly, in terms of the latter — the principle underlying this was well known to Uldall: '*Function*, then, remains as a "primitive idea", i.e. a term which, for the time being, must be taken for granted. This is not to say that it is indefinable in an absolute sense: *its content is the whole of the algebra, and the establishment of the algebra will serve to define it*' (1957:36 — italics ours). 'The whole system serves to define the formally undefined terms' (*ibid.*:19). It is probably best to

say that taxemes of expression and cenemes are first POSTULATED as abstract entities and then CHARACTERIZED by their phonetic substance as well as by their distribution and by the alternations and syncretisms they contract with other entities in the system (cf. Fudge 1969b:§2.3).

Ungeheuer, as stated above, objected to the glossematicians' apparent assumption that the centrality of structural statements in science implied that the object of scientific study was also abstract and insubstantial. However, it is arguable that the object of linguistics is in fact to a large extent non-substantial. For example, if two people speak with accents which are phonetically very different from one another, not only may each be able to understand the other, but each will recognize the other as a speaker of the same language — how can we account for this except in terms of an underlying system for each speaker which must be abstract, since the other speaker's phonetically very different speech can be 'fitted into it' in some sense? The glossematic position appears to be that linguistics proper is to be restricted to the study of this underlying abstract system, to which the name of LINGUISTIC SCHEMA is given (Hjelmslev 1961:81, 106). The differing phonetic norms are called LINGUISTIC USAGE (*ibid.*); many different linguistic usages can be ordered to the same linguistic schema, and each may be said to MANIFEST it. If usage is not part of linguistic science, however, i.e. if linguistics proper stops before the arbitrarily named entities are confronted with the substance, then Coseriu's fears that glossematics is not applicable to the data of experience (1962:215–17) would appear to be well-founded — how can the glossematician be certain that the phonological categories (cenemes etc.) he has postulated without linking them up with the substance will in any way be usable by the phonetician? See below (§4.7(b)), and compare also our remarks in the section entitled 'The theory' (§4.5).

4.4 *The Analytical Procedure of Glossematics*

The whole procedure of the analysis of language with respect to *substance* and *function*, as suggested by Hjelmslev, may be summarized as follows:

1. The entities of the two planes, expression and content, of a particular language must be *found* and recognized both by their *heteroplane functions* [i.e. by applying the commutation test] *and* in their *substance*.
2. Once the entities have been found and recognized they must be *described* and defined by their *homoplane* functions [i.e. relationships to other elements of the same kind] *without* reference to their *substance*. This description will be an algebraic notation.
3. The entities are tentatively drawn up into a *provisional system*.
4. This must be done for as many languages as possible.
5. On the basis of the greatest possible number of data thus obtained, a *calculation* is to be made, by *algebraic* operations, of all relations actually found and theoretically *possible*.
6. The calculus of these relations is the system not of *a* language or of *many* languages, but the *system of language*.
7. Every particular language shall be confronted with the system, and show up its character by the relations it has chosen to realize. By these it will be possible *to describe each language completely in a general algebraic notation applicable to all languages*. The tentative systems,

previously drawn up of each language, will thus be revised where necessary and receive their definite forms (Siertsema 1955:25–6).

The procedure advocated by Hjelmslev is called ANALYTIC (:12–13) or DEDUCTIVE (:31), neither of these terms being used in their everyday sense: what is intended is that the description of a text should begin with the text as an unanalyzed whole (:12, 31), and should then proceed to regard it 'as a class analyzed into components, then these components as classes analyzed into components, and so on until the analysis is completed' (:13). What is in fact being carried out is a further check on the result of step 7 above, certainly not the preliminary analysis of step 1; Siertsema (1955:49–50) calls the latter ANALYSIS NO. 1. (corresponding to finding[a]) and the former ANALYSIS NO. 2. (corresponding to finding[c]). In fact, analysis no. 1. is not analytic or deductive (in the technical sense of proceeding from class to component), but of necessity synthetic and inductive (proceeding from component to class); it plays an essential part in the work of the linguist as being 'the first of all methods to be applied' (Siertsema 1955:51), but on the other hand it cannot be denied that, by itself, 'it cannot ensure a self-consistent and simple description' (:12). It is precisely this last which is the aim of the procedure (:16).

At this point we will introduce the distinction between PROCESS and SYSTEM; process refers to an observable concatenation of events, etc., while system is the abstract structure that underlies the process. System is logically prior to process: 'A process is unimaginable ... without a system lying behind it. On the other hand, a system is not unimaginable without a process; the existence of a system does not presuppose the existence of a process' (:39). The processes which are relevant for glossematics are TEXTS (which are not restricted to written material), while the systems which underlie texts are LANGUAGES.

The application of the procedure establishes (i.e. finds[c]) the various parts of the text and their relationships to each other: 'the important thing is not the division of an object into parts, but the conduct of the analysis so that it conforms to the mutual dependences between those parts' (:22). This is done on the basis of the linguist's knowledge of the system (the language): '"*Process*", in the quotations from Ch. II [sic. — surely Ch. 11 is meant?] in *OSG* is, as Professor Hjelmslev kindly told me, to be understood as "*analyzed process*". ... Finding[a] ... is supposed to have taken place already' (Siertsema 1955:37). But the system is a premise as well as a result (Coseriu 1962:119; Siertsema 1955:49) of the analysis; as a premise, of course, 'system' must be understood in the sense of the 'provisional system' mentioned in Siertsema's step 3 (above).

4.5 *The Theory*

The aim of a linguistic theory according to Hjelmslev is 'to provide a procedural method by means of which a given text can be comprehended through a self-consistent and exhaustive description' (:16); it is thus logically prior to the procedure as described in the previous section. By his own confession this is not a theory in the ordinary sense

of 'a system of hypotheses' (:13–14): 'A theory in Hjelmslev's sense seems to be a system of formal premises, arbitrary definitions and theorems, by which we can calculate the possibilities of combination of the constant elements of a text. But then again it seems to *be* this calculation itself ...' (Siertsema 1955:58). A theory must be 1. ARBITRARY, in so far as it is 'in itself independent of any experience', and 2. APPROPRIATE, in so far as it 'introduces certain premises concerning which the theoretician knows from preceding experience that they fulfil the conditions for application to certain empirical data' (:14). 'The empirical data can never strengthen or weaken the theory itself, but only its applicability' (*ibid.*). However, 'on the basis of a theory and its theorems we may construct hypotheses (including the so-called laws), the fate of which ... depends exclusively on verification' (*ibid.*).

4.6 *The Functions (Dependences or Relationships)*

The basic dependence of importance in glossematics is '*a* presupposes *b*' (Uldall 1957: 18). Three different cases can be distinguished (Hjelmslev 1961:24):

1. INTERDEPENDENCE: *a* presupposes *b* and *b* presupposes *a*.
2. DETERMINATION: *a* presupposes *b* but *b* does not presuppose *a* (in which case *a* is called the *variable* and *b* the *constant*).
3. CONSTELLATION: *a* and *b* are compatible but neither presupposes the other.

According to Siertsema (1955:76), '... a fourth relation ought to have been added for completeness' sake: the relation where the presence of a certain element in the text *precludes* the presence of a certain other element'. Within the context of the algebra, this would appear to be a reasonable demand; however, 'Hjelmslev answers that experience has taught him that it is ... not *expedient* to attempt an analysis of a text by looking for that "dependence". ... [This answer] proves that the so-called "algebraic" calculation of possible combinations is, at its outset, not purely algebraic, but based on an inductively obtained experience to a much larger extent than a first reading of *OSG* would lead one to believe' (*ibid.*).

These functions (dependences) are then further subdivided into syntagmatic 'both-and' functions ('relations' (Hjelmslev 1961:38) or 'connexions' (Uldall 1957:42)) and paradigmatic 'either-or' functions ('correlations' (Hjelmslev 1961:38) or 'equivalences' (Uldall 1949:72)), giving the scheme shown in Table 7.

TABLE 7

Summary of types of function (*cf. Hjelmslev* 1961:41)

Function		Relation (connexion) 'both-and'	Correlation (equivalence) 'either-or'
Cohesion	Determination	Selection	Specification
Reciprocity	Interdependence	Solidarity	Complementarity
Reciprocity	Constellation	Combination	Autonomy

Thus the function between vowel and consonant in a syllable (i.e. in a process) is a selection (Hjelmslev 1961:27–8): there MUST be a vowel in every syllable and there MAY be a consonant or consonants. However, in the system, the function between them is a complementarity, since there are no languages which do not have both vowels and consonants. The function between fricatives and stops in a system is a specification with fricatives as the variable, since there are languages without fricatives but no languages without stops.

The 'either-or' functions are relations (in the strict set-theoretic sense of the term, not Hjelmslev's), while the 'both-and' functions are rather more complex, involving operations as well as relations (Ungeheuer 1960:20–1): for example the selection between vowel and consonant in a syllable implies that V occurs, and that C+V occurs (where + represents the operation of concatenation). This is not a fatal objection to the framework, however, as any n-ary operation can be stated in the form of an (n+1)-place relation (for instance, we can say that 5 is the result of the binary operation '+' operating on 2 and 3, or alternatively that the ordered triple (2, 3, 5) is a member of the three-place relation 'sum').

4.7 *Some Sample Analyses*

a) *The Czech vowels* (Spang-Hanssen 1949:67–8)

Czech has the following short vowels: *a*, *e*, *i*, (or *y*), *o* and *u*; also (orthographically) the following long vowels: *á*, *é*, *í* (or *ý*), *ú* (inital only), and *ů* (in other than initial position) — *ó* (long *o*) occurs in foreign words only. There are several diphthongs, including *ou*. An analysis according to the substance would lead to the representation of the long vowels (in the order listed above) as: *aa*, *ee*, *ii*, *uu*, and *uu*; the diphthong *ou* could then be represented as *ou*, and the other diphthongs analogously.

But as regards the simple description of inflexion and derivation paradigms, another reduction of *ou* and *ů* will be preferable (the number of taxemes remaining unchanged). In the numerous cases in which in such paradigms an alternation takes place between short and long vowels in the stem (or root), *o* alternates with *ů* (not with *ó*, which occurs only in foreign words), and *u* with *ou* or (only initially) with *ú* (but not with *ů*); e.g.

Nominative sing.	hrách	'pea'	chléb	'bread'	dům	'house'
Genitive sing.	hrachu		chleba		domu	
Nominative sing.	kráva	'cow'	trouba	'pipe'		
Genitive plur.	krav		trub			
	prach	'dust'	bok	'hip, side'	zub	'tooth'
Diminutive	prášek		bůček		zoubek	
Infinitive	hájiti	'defend'	chýliti	'bend'	hloubiti	'deepen'
Iterative infinitive	hajovati		chylovati		hlubovati	

(Spang-Hanssen 1949:67–8).

Hence all the quantitative groupings of the Czech vowels emerge from the morpho-

logical alternations and can be stated within the schema without reference to phonetic substance (though not perhaps strictly without reference to content-substance, since we are dealing with forms of THE SAME WORD in each of the instances). Spang-Hanssen continues: 'It will be possible to formulate the alternations more simply ... by reducing *ů* to *oo* and by reducing both *ou* and *ú* to *uu*.'

Spang-Hanssen's approach implies a syllable structure of the form (C)V(V)(C), where parenthesized elements are optional. This has the possible advantage that all diphthongs as well as short and long vowels can be easily handled within one framework. However, the morphological alternations summarized in the example would be better handled within the syllabic framework (C)V(C), with quantity as a ceneme which combines with V to yield the 'long' vowels — this would mean that diphthongs other than *ou* would have to be treated either as V elements in their own right, or as short vowels combined with other cenemes (compare the analysis of English vowels and diphthongs in Fudge 1969b).

b) *The expression system of French* (Togeby 1951:25-88 — parenthesized numbers in this section refer to pages of this work).

This description is arranged in the form of a deduction (see above §4.4) beginning with the whole text. There is first a section (:25–43) in which the analysis operates in parallel fashion on expression and content alike. Under the first subheading 'Syntagmatics' we have four operations (the notation A: B+C implies 'A has components B and C'; the order of B and C is not necessarily sequential, at least for the content):

1. Text: expression line + content line. This divides the text into two simultaneous and coterminous parts, linked by a function of solidarity.

2. Line: modulation sentences

The division here is into sequential elements on both content and expression planes. Paragraphs, chapters, etc. are not considered as entering into the analysis as in contrast to sentences they exhibit no formal features other than those of texts; the functions between them are combinations.

3. Modulation sentence: modulation unit + sentence

The MODULATION UNIT is a sequence of intonation-groups which coincides with the sentence. The function here is a selection, with the modulation unit as constant and the sentence as a variable: a rising intonation without words can occur as a form of question.

4. Modulation unit: modulation elements

The modulation element is the intonation pattern pertaining to a single intonation-group: a rising intonation indicates incompletion, a falling intonation completion.

Under the second subheading 'Systematics' (:29) we have a listing of the different classes of elements, and the inventory and systematic arrangement of each class.

1. Elements: phonemes
   morpho-phonemes
   morphemes
   onomatopoeias

These classes are defined by the plane(s) to which they have relevance: phonemes belong to the expression, morpho-phonemes (not the usual use of the term: see the next operation) belong to both expression and content, morphemes to the content only, and onomatopoeias (i.e. expressions like *pstt* (:43)) to neither (being words which do not enter into constructions, and which do not obey the normal phonological rules of the language).

2. Morpho-phonemes: modulations
   emphases

Emphases (emphatic or contrastive stresses but not emotional stresses) are optional and can extend their operation beyond the limits of the sentence, as in *Il est catholique. Il n'est pas protestant* (:35); modulations (intonation elements) are obligatory and may not overlap sentence boundaries.

The next main section (:44–88) deals with the expression plane alone. The first subsection is entitled 'Prosody' i.e. phonotactics; once again we have analytic (deductive) operations which might be compared with the phrase-structure rules of e.g. Chomsky 1957, except that they aim to be universal (with the possibility that some operations are not relevant in certain languages).

1. Sentence: syllable-groups

Togeby prefers the term SYLLABLE-GROUP here as he wishes to reserve WORD for a content element.

2. Syllable-group: word-accent + syllable-group.

This rule is not exemplified, but one concludes that WORD ACCENT is something tonal (as in Swedish) — the phenomenon usually called word-stress or word-accent is referred to as ACCENT, and is introduced in operation 4. of this section.

3. Syllable-group: syllables
4. Syllable: accent + syllabic base

This operation gives no result when applied to French.

5. Syllabic base: vocalic nucleus + consonantal margin.

For French the function between the two parts of the syllable is a selection (since vowels can occur without consonants); however, there are languages in which both consonants and vowels must be present in every syllable — in these cases we have a solidarity.

6. Syllabic margin: consonants
7. Syllabic nucleus: marginal vowel + central vowel + marginal vowel.

The second subsection (:73–88) is entitled 'Phonology', and like 'Systematics' (above) consists of a list of classes and the inventory and systematic arrangement of the elements within each class.

1. Phonemes: accents (not applicable for French)
   vowels
   consonants
2. Accents: strong
   weak

Secondary and tertiary stress are to be considered as variants of strong accent, determined by such factors as grammatical subordination and proximity to the main accent.

3. Consonants: (inventory of 17 for French)

All 17 are found initially: h, ʒ, ʃ, s, z, m, n, l, r, v, f, d, t, g, k, b, p (:79). The palatal nasal is represented by /ni/, and the palatal semivowel is assigned to the syllable-nucleus as a member of the phoneme /i/. These are arranged in a system by the following criteria (:81–3):

(i) Syllabic position: initial or final,

(ii) Relationship to the systematic classes: vocalic, i.e. always occur next to a vowel, or consonantal, i.e. may occur other than next to a vowel: the former class is subdivided on the grounds of compatibility with other consonants, i.e. possibility of figuring in clusters,

(iii) Syncretisms (neutralizations),

(iv) Extent of distribution; extensive, i.e. with the wider distribution of the pair, or intensive, i.e. with the more restricted distribution of the pair.

The application of these gives the following results:

(i) Initial only: h, ʒ, v;
Initial or final: all the rest.

(ii) Vocalic h, ʒ; ʃ, z, m, n, l, r;
Incompatible: ʃ, z, m;
Compatible: n, l, r;
Consonantal: v (now fully defined); s, f, d, t, g, k, b, p;

(Note: plural [z] in liaison is a manifestation of /s/.)

(iii) In liaison s has the same manifestation as z (*gros enfant*)
In liaison f has the same manifestation as v (*neuf heures*)
In liaison d has the same manifestation as t (*grand enfant*)
In liaison g has the same manifestation as k (*sang impur*, cf. *sanglant*)
In nasalized vowels m and n are realized alike.
Before voiceless consonants b and p are realized alike.
(ʃ, z, m, n, f, s are now fully defined)

(iv) We are now left with five pairs, as follows:

intensive	extensive	reason
h	ʒ	h only word-initial, ʒ syllable-initial
l	r	No tl-, dl-, vl-
d	t	t implied by d in liaison
g	k	k implied by g in liaison
b	p	only p occurs before voiceless

[It would appear that these last three pairs of consonants are distinguished on grounds of substance: in fact all the syncretisms under (iii) involve substance in their definitions — ECF].

We summarize these results (Table 8) in a form analogous to the 'classificatory matrix' of generative phonology.

TABLE 8

Consonants of French

	h	ʒ	ʃ	s	z	m	n	l	r	v	f	d	t	g	k	b	p
Final position possible	−	−	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+
Vocalic	+	+	+	−	+	+	+	+	+	−	−	−	−	−	−	−	−
Compatible			−		−	−	+	+	+								
Syncretism			−	1	1	2	2	−	−	3	3	4	4	5	5	6	6
Extensive	−	+						−	+			−	+	−	+	−	+

4. Vowels: (inventory of 10 for French)

[o], [ø] are reduced to /oə/, /øə/ respectively, where /o/, /ø/ alone are manifested as [ə], [œ]. The following criteria apply (as before):

(i) Position in the vocalic nucleus: final, initial, central (see operation 7 under 'Prosody' above),

(ii) Relationship to the systematic classes: vocalic or consonantal,

(iii) Syncretisms,

(iv) Extent of distribution: extensive or intensive.

Results:

(ii) yields no new results for French: all central vowels are vocalic and all initial and/or final vowels are consonantal (must appear next to a consonant).

(i) Initial: y, u
Initial-final: i
Final: ə
} now fully defined
Central: o, e, ɛ, ø, ɑ, a

(iii) With nasalization: y and ø realized alike (*jeun–jeuner, brun–brune*)
i, e, ɛ realized alike (*plein–pleine–plénier, fin–fine*)
ɑ, a realized alike (no examples given)

(iv) We are left with two pairs, as follows:

intensive	extensive	reason
ɑ	a	ɑ appears in very few contexts, and contrasts with a before t only
e	ɛ	e occurs in phonetically open syllables only

[Again (iii) and (iv) involve considerations of substance — ECF]

We summarize these results in Table 9.

TABLE 9

Vowels of French

	ə	ɪ	y	u	o	ø	e	ɛ	ɑ	a
Final in nucleus	+	—	—	—	—	—	—	—	—	—
Initial in nucleus	—	—	+	+	—	—	—	—	—	—
Syncretism		1	2	—	—	2	1	1	3	3
Extensive							—	+	—	+

This example illustrates well:

a) The glossematic method — including some instances where it cannot be strictly applied,

b) The strengths of the method — simplicity of morphological statement consequent on a refusal to place too high a value on phonetic substance, and the postulation of a phonological hierarchy,

c) The weaknesses of the method — the cenemes established in both vowel and consonant systems are of little relevance to the phonetician: it would be a hard task to order this linguistic schema to the purport, which is part of the linguist's task, after all. In fact it is highly doubtful whether Togeby's approach to syncretisms yields cenemes anything like those intended by Hjelmslev. The ideal description should aim at simplicity of the manifestation rules linking form with substance, as well as simplicity of morphological statement.

5. PHONETICS

5.1 *'Experimental' (Instrumental) Phonetics up to 1947*

The work of the 'classical' phoneticians of the late 19th and early 20th century (of whom we may particularly mention Sievers, Sweet and Passy, together with Jespersen and Jones (see §2 above)) was intimately connected with language, and in particular with the teaching of pronunciation — the work of the International Phonetic Association deserves to be cited in this connection. This emphasis goes part of the way to explain the interest shown by this approach in the articulatory side of phonetics.

From about the turn of the century, however, a new approach to phonetics began to gather momentum: the study of the articulatory and acoustic aspects of speech-sounds using instruments (though technical shortcomings precluded much work on the latter before 1930). As pioneers in this field we may mention Rousselot (1897–1908) in Paris, Pipping (1899) in Helsinki and E.A. Meyer (1911) in Uppsala; underlying the work of all of these was that of Helmholtz (1863). The new approach, EXPERIMENTAL PHONETICS as it came to be called, became characterized by a certain isolation from linguistics, particularly in Germany. Very few experimental phoneti-

cians saw a need for a linguistic basis to their researches, and this inevitably widened the gap between them and the linguistic phoneticians (cf. Jespersen 1904). Among these few, in addition to Rousselot and E. A. Meyer, are included Grammont (1933) in Montpellier, and Selmer (1956, and see also Kloster Jensen 1957) in Oslo.

The most thoroughgoing exponent of 'pure (i.e. alinguistic) phonetics' was perhaps Panconcelli-Calzia, an Italian who studied under Rousselot, and spent most of his life in Germany, being best known as the Director (1910–49) of the Phonetics Laboratory at Hamburg. 'Alinguistic' as a characterization does not refer to the material he investigated: the laboratory was at first part of the Seminar für Kolonialsprachen in the Colonial Institute under Meinhof, and data from several African and Oriental languages were studied, with special reference to tonal phenomena. It was his theoretical basis that was alinguistic: the phonetic substance, being observable and measurable, was given, and linguistic facts could be discovered by investigating it by the methods of natural science. The realization that the situation was not quite as simple as this was long in coming: 'Professor Panconcelli-Calzia seems only recently to have awakened to the idea that four-fifths of linguistics, including even experimental phonetics, is invention rather than discovery' (Firth and Adam 1950). The modified position is embodied in Panconcelli-Calzia 1947, while Gerhardt 1950, 1951 gives further discussion of the issues raised there. Selmer (1957:237) tells us that one of his bêtes noires was dynamic accent, and several of his studies (e.g. Panconcelli-Calzia 1917), were devoted to investigations of the phonetic nature of stress; his large output (listed in *Zeitschrift für Phonetik* 12:ix-xiv) also includes full-scale studies of experimental phonetics (1924) and phonetics in general (1947, 1948). Von Essen 1956 and Wängler 1959 outline the history and development of work in Hamburg from its inception.

The American phonetician Scripture (long associated with Vienna) was ready to dismiss completely the concepts of non-experimental phonetics — in the light of experimental phonetics they could only be called an illusion:

> Die Begriffe müssen Resultate von Experimenten bzw. Messungen darstellen. Dies ist nicht der Fall bei der nicht-experimentellen Phonetik, und man muss die ganze überlieferte Phonetik des vorigen Jahrhunderts als unbegründet ablehnen. ... Eine nicht-experimentelle Phonetik kann es nicht geben; jede andere Phonetik neben der experimentellen ist eine Illusion (Scripture 1932:171).

For various other (less extreme) views of the relationship see e.g. De Groot 1928, Sotavalta 1936; Hjelmslev 1938a states the opposite view, i.e. that phonetics must be logically dependent on linguistics (cf. §5.2).

Other notable German work in experimental phonetics was carried out at the Institut für Phonetik in Bonn under the leadership of Menzerath (1921–54). Menzerath and de Lacerda 1933, a demonstration of the difficulty of segmenting the stream of speech into speech-sounds as successive elements, is one of the most significant contributions of this group, while of his other works (listed in full in *Orbis* 5 (1956):292–4)

Menzerath 1954 deserves mention. Miron 1956 gives a useful summary (including historical survey) of the work of the Institute.

The Experimental Phonetics Laboratory at Coimbra, Portugal, has links with both the foregoing establishments — its founder and director de Lacerda was a pupil of Panconcelli-Calzia before collaborating with Menzerath. For a summary of the work of the Laboratory since its foundation in 1936 see Hammarström 1952a, Pop 1956c. De Lacerda's most important contribution to experimental phonetics was perhaps the invention of the chromograph (de Lacerda 1934).

In Denmark the first proposals for the foundation of a laboratory for experimental phonetics were made in 1895, but it was not until 1933 that such a laboratory was set up within the Institute for Speech Defects under the leadership of Smith. Smith 1956 gives a brief survey of the work of the laboratory, including a summary of some of the experimental work done by individuals (e.g. Jespersen and Verner), before its foundation.

We give a list of some other West European universities where experimental phonetic work was carried out before 1947, together with relevant references: Amsterdam (Kaiser 1956, 1939–44), Berlin (Wethlo 1955), Bologna (Pop 1956b), Helsinki (Sovijärvi 1956, which gives a full list of publications associated with the Phonetics Institute, including in particular Sotavalta 1938), Madrid (Flórez 1956; of Navarro Tomás's works cited there the most important is Navarro Tomás 1918), Montpellier (Perrot 1956, Grammont 1933), Milan (Pop 1950:610–18; Gemelli and Pastori 1934, Gemelli 1950), Oslo (Selmer 1956, Kloster Jensen 1957) Paris (Durand 1956a, 1946), Strasbourg (Borza 1956, Straka and Simon 1960:497–503 — not a great deal of work before 1947).

The following works should be mentioned in connection with the acoustic analysis of speech-sounds: Stumpf 1926, Paget 1930, Smith 1947.

5.2 *Phonometry*

As mentioned above (§1.2), the gulf between 'experimental' phonetics and linguistics (including 'classical' phonetics) was widened by the Prague emphasis on the clear-cut separation between phonology and phonetics. This approach assumed that there was a 'phonological' linguistic approach to speech-sounds in addition to and quite distinct from a phonetic, scientific one; there was therefore no incentive to attempt a synthesis — the aim was mainly self-protection. In order to change this situation a new theoretical approach was needed; the first serious attempt at such an approach came from a German medical scientist, E. Zwirner. His theories are most conveniently approached via Fischer-Jørgensen 1964, where they are summarized as follows:

> Speech sounds are not mere sounds and cannot be defined exhaustively by means of their physical, physiological and psychological properties. They are sounds used for the purpose of communication by people belonging to a definite linguistic community, governed by a

definite, historically transmitted norm. Each language contains a restricted number of sound classes (otherwise communication would be impossible), but in the concrete act of speech these classes are manifested by an infinite number of different sounds. Not these single, concrete sounds, but the sound classes of the language, the 'norms', are the object of linguistic description. It is the task of phonometry to investigate the physical and physiological variation of these classes, but the classes cannot be established on the basis of physiological or physical curves. They must be pre-supposed by the variational analysis, and can only be established by a linguistic analysis of the language. ... The relation between linguistic norms, physiological and physical measurements and physiological [sic — psychological? ECF] perception is a question of projection ('Zuordnung') between four different phenomena, but the linguistic analysis comes first, the physiological, physical and psychological phenomena being manifestations of linguistic classes (Fischer-Jørgensen 1964:145–6).

Another summary of the approach is Zwirner 1956; for a complete bibliography up to 1962 see Zwirner 1962; Hjelmslev 1938b gives a favourable account of the theory — among the linguistic theories glossematics (see §4) was in fact the one which came closest to Zwirner's own views on the logical priority of the linguistic over the phonetic. The basic theoretical work is Zwirner and Zwirner 1936a, of which Zwirner and Ezawa 1966 is a revised edition, and Zwirner and Ezawa 1968 an extension. The main phonometric research has been on the prosodic phenomena, cf. Zwirner 1952, Zwirner and Zwirner 1935, 1936b, 1937, Maack 1954. For comparisons with other theories see Maack 1957, Zwirner 1939, 1964 (all with Prague phonology) and H. Richter 1967 (with Šaumjan's 'Two-level' theory).

5.3 *Instrumental Phonetics since 1947*

In recent years the breach between linguistics and phonetics has to a considerable extent healed. Linguists have been ready to study and accept the results of experimental phonetics, provided the experimenter plans his work with its linguistic relevance in mind:

Linguistics needs laboratories and we should not be discouraged by the prejudiced statement that experimental phonetics has contributed very little to the development of descriptive linguistics during the last thirty years.

Almost all laboratory investigations which could be described as phonetic really deal with phonic material at the phonic level. It is, however, important to realise that the instrumental investigation is prompted, in all probability, by tentative analyses at other levels, especially the phonetic level [for the distinction between PHONIC and PHONETIC see above §3.3 — ECF]. ... The linguist will, of necessity, have in mind tentative analyses at the phonological and grammatical levels, and unless the results of laboratory experiments throw light on findings at these levels there is no profit in them, except, perhaps, in the negative (Firth 1959:29, 34–5).

Correspondingly phoneticians have seen the need for a linguistic basis for at least part of their work: Fischer-Jørgensen, for instance, states (1959) that functional considerations are indispensable in 'special phonetics' (the phonetics of a particular language), but may not always be so in general phonetics. However, it is at the

level of allophones rather than phonemes that the encounter between phonetics and phonology takes place: 'The statistic analysis of phonetic measurements should, however, take its starting-point not in phonemes, but in classes of positional variants that must be homogeneous, both in functional and in phonetic respect. The attempt to give a common phonetic definition of all variants of a phoneme must be the last step in the description' (*ibid.*:27 — from the English summary).

The enormous progress in the field of acoustic analysis of speech since 1947 is due mainly to the development of an American invention, the sound spectrograph; furthermore, many West European scholars have done a good deal of their research in American institutions. One result of this is that it is somewhat artificial, and sometimes almost impossible, to attempt any rigid separation between West European phonetics and American phonetics: the best summaries of work done in the instrumental field tend to include contributions from both. We will list these summaries, and pick out some of the most important European work for special mention. The historical summaries quoted in §5.1 above may be supplemented by the following: von Essen 1952 (work in Germany), Ladefoged 1957 (work in Edinburgh), Krauss 1953 (Lund).

a) Speech analysis. Summaries giving description of instruments and their use: Fant 1958:291–6, 320–46, Fant 1968:177–91, Meyer-Eppler 1950, Cooper 1965. Summary of gating techniques: 't Hart and Cohen 1964. Special studies: Meyer-Eppler 1953, Fischer-Jørgensen 1954, Green 1958, Fant 1962, Tscheschner 1965a, b, 1966a, b (four articles bearing different titles but forming a single whole).

b) Mechanical speech recognition. Summary: Lindgren 1965. Special studies: Fry and Denes 1958, Tillmann 1967.

c) Speech synthesis. Summaries of instrumentation: Fant 1958:346–53, Fant 1968: 253–72, Mettas 1965. Special studies: Lawrence 1953, Durand 1956b, Ladefoged and Broadbent 1957, Arnold et al. 1958, Cohen et al. 1963, Holmes et al. 1964, Laver 1965, Mattingly 1966.

d) Instruments for pitch measurement. Summaries: Fant 1958:328–30, Ungeheuer 1963, Fry 1968:374–83. Special studies: Meyer-Eppler 1948, Hammarström 1952b, A. M. Jones 1955, Risberg 1962.

e) Instruments for intensity measurements. Summaries: Fant 1958:334–9, Fry 1968:383–6. Special study: Maack 1953.

f) Relations between articulatory and acoustic phenomena. Summaries: Fischer-Jørgensen 1958:466–9; Fant 1968:191–223. Special studies on the question of which is the better basis for phonetic study: the champion of an articulatory basis has been Forchhammer, while Malmberg has been one of the chief supporters of the acoustic basis (Forchhammer and Malmberg 1955). Special studies on the general question of the relations between phenomena on the two levels: Fischer-Jørgensen 1952b, Fant 1960 (of particular importance in this field: the basis of the theory is that the properties of acoustic resonators are analogous to those of electrical networks. The formant patterns of both vowels and consonants may be specified on the basis of three para-

meters relating to the shape of the vocal tract. These are: '(1) the place and (2) the cross-sectional area of the tongue constriction and (3) the degree of lip-opening' (Fant 1960:210)), Ungeheuer 1962 (a theory of vowel articulation on a mathematical basis which is purely acoustic).

g) The larynx. Summaries of instrumentation: van den Berg 1968:283–91 (larynx); Strenger 1959 (sub-glottic air-pressure). Special studies: Smith 1954 (mode of vibration of the vocal cords); Ladefoged 1962 (sub-glottal activity).

h) X-ray photography and cinematography. Summaries: Simon 1961, Strenger 1968:335–42. Special studies: Sovijärvi 1959, Truby 1959, Simon 1967.

i) Palatography. Summaries: Witting 1953; Strenger 1968:343–54.

j) Electromyography. Summary: Fromkin and Ladefoged 1966. Special studies: Draper et al. 1959, 1960 (respiratory muscles), Fritzell 1963 (soft palate), Faaborg-Andersen 1965 (larynx), Tatham and Morton 1968 (lips).

k) General. Regular bibliographical surveys appear in *American Speech* and the *Journal of the Acoustical Society of America.*

5.4 *Non-instrumental Phonetics*

We first give a selection of introductory treatments and reference works in the field which have appeared during the last fifty years; some of these also treat phonology and/or instrumental phonetics. Roudet 1925, Westermann and Ward 1933 (with special reference to phonetics of African languages), Grammont 1933 (with a good section entitled 'Phonétique impressive' on onomatopoeia, sound symbolism, etc.), Dieth 1950 (particularly useful), Gili Gaya 1950 (unusual and interesting in that it treats prosodic phenomena and the syllable before treating segmental elements), Forchhammer 1951 (particular emphasis on the primacy of the articulatory side), von Essen 1953 (very full references, especially to German work), Malmberg 1963, Straka 1965, Moles and Vallancien 1966, Abercrombie 1967 (introductory treatment), Malmberg 1968 (collection of summaries — many very useful — of various aspects of phonetics by various writers).

We also draw attention to the following general studies and collections: Fouché 1927, Bonfante and Porzio Gernia 1964, Abercrombie 1965, Ladefoged 1965. On the physiological side the following summaries deserve mention: Husson 1959, van den Berg 1968, Sonesson 1968. On the perceptual side, Mol and Uhlenbeck 1955, 1959, and Mol 1963 express dissent from the usual view that the ear analyses the complex wave-forms of speech in the same way as the sound spectrograph; Bergsveinsson 1959 deals with the difficulties encountered in transcribing phonetically speech in an unknown language; Hanson 1960 is a study, with very full references, of perceptual judgments of similarity between phonemes.

For a summary of statistical studies in phonetics see Karlgren 1968; for a treatment of the various methods available von Essen 1967 is useful.

6. PHONOTACTICS AND SUPRASEGMENTALS

6.1 *Syllables, Words and Larger Units*

The extent which the syllable is taken as a basic unit in phonology varies very much between different theoretical approaches: 'In general the Prague phonologists do not pay much attention to [the] problem [of establishing categories of phonemes] but like the American phonemicists they very often describe the syllabic structure of the language in question, whereas the London school of phonetics is distinguished by its almost complete disregard of syllabic structure.' (Fischer-Jørgensen 1952a:10). Glossematicians attach a good deal of importance to the syllable, while for prosodic phonologists it is axiomatic that one begins with the syllable. The diametrically opposed view, that the syllable is universally redundant, is propounded by Kohler (1966:346–8).

The relation between 'phonetic' and 'phonemic' syllables is not necessarily one-to-one: the phonemic syllable is an abstract unit which may correlate to some extent with tone- or stress-placement, or with the smallest unit capable of constituting an utterance by itself, or which forms a suitable basis for stating the distribution of the phonemes of the language. In order to set up such a unit, 'the most suitable method will probably be to choose the structural unit presenting the closest affinity to the phonetic syllable' (Fischer-Jørgensen 1952a:16). This approach presupposes that it is possible to recognize a phonetic syllable in any language: in fact many different definitions of this unit have been proposed (peak of prominence (cf. Jones 1956:55–60), puff of air, ballistic stroke of the intercostal muscles (cf. Ladefoged et al. 1958), etc.).

This situation has led many to a preference for a distributional method of defining the phonemic syllable: thus O'Connor and Trim 1953, who consider all the occurring word-initial and word-final sequences of two phonemes in English — the phonemes fall into two classes on the basis of frequency of co-occurrence with other phonemes, and it is found that these classes are precisely the traditional vowels and consonants. This method does not succeed with every language (Arnold 1964).

Yet a third approach defines a syllable, so to speak, in terms of the whole phonological grammar of the language concerned: it is first postulated as a basic element and then characterized by the phonetic and distributional properties of the elements associated with it in the subsequent parts of the grammar (Fudge 1969b).

For a treatment of phonetic and phonemic syllables, with good bibliographical references, see Kloster Jensen 1963. For a summary of possible approaches to phonotactics with less emphasis on the syllable see Sigurd 1968; Sigurd 1965 is a more extended treatment of this topic with reference to Swedish. Other studies of interest are de Groot 1941, Vogt 1942, 1958, and Malmberg 1949.

Not all distributional restrictions on phoneme sequences can be handled at the syllable level, however; for example, some syllable types cannot occur in word-final position (e.g. stressed open syllables with short vowels in English), while prosodic features like stress also imply the relevance of the word, and probably of longer

elements still (Bendor-Samuel 1962:119–23). Occasionally morpheme structure is relevant, though not all types of morphemes are suitable for this treatment (Fischer-Jørgensen 1952a:15); usually, suitable morphemes bear a strong resemblance to words of the language concerned (cf. Uhlenbeck 1950 — 'morpheme'-structure in Javanese). For general treatments of the phonological word see Jones 1931, Collinder 1939, de Groot 1939; Kruisinga 1943 and Menzerath 1954 are studies of the word in English and German respectively.

6.2 *Tone, including Scandinavian Word-tones*

For a summary see Fry 1968:366–8, 389–94. On Scandinavian word-tones see Meyer 1937, Malmberg 1956a, 1962b, Kloster Jensen 1961, Hadding-Koch 1962, International Society of Phonetic Sciences 1963. For other types of tone, apart from Beach 1924, 1938 (see §2.1), we cite Laman 1922 (an early treatment of tone in a Bantu language), Bröring 1925, Chou 1931 and Meriggi 1931 (Hamburg experimental studies in two Chinese dialects and in Hottentot), Wang 1937 (experimental work on Pekingese done in Paris), Armstrong 1940 (Kikuyu), Giet 1950 (North Chinese dialects); Chang 1958 and Tay 1968 (studies done in Edinburgh) are particularly interesting on the interaction of tone and intonation in two Chinese dialects. The relation of tonal phenomena and whispering is handled by Giet 1956, Meyer-Eppler 1957, Kloster Jensen 1958, Segerbäck 1965. Garde 1966 is a functional study of tones in South Slavic.

6.3 *Duration and Quantity*

Fry 1968:370, 386–8 summarizes the field usefully: Zwirner and his colleagues have produced some interesting studies, e.g. Zwirner and Zwirner 1937, Maack 1948. Also worthy of mention are Malmberg 1945, Durand 1946, Elert 1964.

6.4 *Stress*

Fry 1968:400–5 is to be recommended as a summary of phonetic aspects, while Garde 1965, 1966, 1967 are important contributions to the understanding of the grammatical relevance of stress.

The problem which has most exercised phoneticians is (to phrase it loosely) 'What is the nature of stress?': in other words, given that a certain syllable is to be given prominence (perceived by a hearer as being emphasized), what are the phonetic resources which the speaker actually uses to attain this end? Intensity or loudness appears to play a secondary role in most languages, whereas pitch movements and changes of duration tend to be much more important. This question is discussed in

all its aspects by Zwirner and Zwirner 1936b, Fry 1955, 1958, 1965, Rigault 1962, Morton and Jassem 1965 (work for the last two studies done on the PAT synthesizer in Edinburgh). The place of duration is investigated by Panconcelli-Calzia 1917, Maack 1954; the contribution of features of pitch forms the subject of Meinhof 1933, Scott 1939, Höffe 1960, while Wodarz 1961 reacts against the suggestion that pitch features are the only ones relevant in Polish stress.

Schmitt 1924 is an earlier linguistically-oriented treatment of stress; Gimson 1956 and Pilch 1967 are discussions of stress in English; Hjelmslev 1937, Martinet 1954, and (particularly illuminating on the different types of stress associated with the various elements of the phonological hierarchy) Bendor-Samuel 1962 also deserve special mention.

6.5 *Intonation*

Useful summaries of work in this field are to be found in Hadding-Koch 1956, Magdics 1963, Fry 1968:366–8, 394–400. Crystal 1969 pays particular attention to paralinguistic (affective, etc.) types of intonation. Zwirner and Zwirner 1935 is one of a long series of phonometric works on the topic. The intonation of English has received a good deal of attention in recent years: we cite Kingdon 1958, Schubiger 1958, Denes 1959, Denes and Milton-Williams 1962, Faure 1962, Wode 1966, and Halliday 1967 (a study particularly concerned with the relation between intonation and grammar). Other studies worth noting are Hadding-Koch 1961 (on Swedish), Bierwisch 1966b and Isačenko and Schädlich 1966 (both on German, the former being of a generative type, the latter an application of speech synthesis to intonation).

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GENERATIVE GRAMMAR AND EUROPEAN LINGUISTICS

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I

The development of the theory of generative grammar during the past fifteen years has led not only to considerable improvements in successive stages, but also to alternative proposals with respect to certain problems of theoretical interest. This concerns in particular the relation between syntax and semantics, where at present at least three different approaches are under lively discussion. None of these alternatives, investigating different possibilities within the general framework of generative transformational grammar, can be taken, however, as representing a separate 'school'. It is also impossible to localize them in any geographical sense. They are simply detailed explorations of alternative hypotheses necessary for an empirically motivated clarification and extension of the theory under discussion. This leads to certain difficulties in the delimitation of the subject matter for the present chapter. Although since the early sixties an increasing number of linguists in Europe have been attracted by the theory of generative grammar, they do not form in any serious sense a particular trend or school or anything of this kind that could be contrasted to corresponding research done elsewhere in the world. Hence the heading 'Generative Grammar in Western Europe' does not specify a coherent and selfcontained topic. It would thus be a rather extrinsic approach to the subject of the present paper if I simply tried to report on some European contributions to research based on the principles of generative grammar. Such a report would be of restricted interest, moreover, since it would have to remain rather incomplete for several reasons. I have therefore chosen to deal with the subject in a fairly different way. In the following sections I will discuss a set of problems that emerge if the principal assumptions of generative grammar are viewed against the background of preceding linguistic theories of European origin. We will see that these problems are in spite of certain similarities, considerably different from those resulting from the corresponding theories developed in the United States.

Such an undertaking seems to me justified for the following reasons. First, the necessity and the validity of the particular claims of a theory become more distinct and more obvious if they are carefully compared with corresponding claims, achievements and defects of their predecessors. Detailed comparisons of this type have been

made with respect to the ideas of American structural linguistics, e.g. by Postal (1964) and Chomsky (1957, 1964). None has yet been made regarding the development of European linguistics since Saussure as summarized most explicitly in the theory of Hjelmslev. (A critical analysis of the theory of Firth and his followers has been given in Langendoen 1968, and hence I will exclude it from the present discussion. The same holds for the views of Martinet, which are analyzed in Postal 1966.) Second, a comparison of different theories does not only show the differences among them, the shortcomings of one of them, but also their similarities, the explicit or latent coherence of tradition, and perhaps the unsolved problems transferred from one theory to the other. Finally it may serve to give a certain impression of how the theory of generative grammar fits into the particular European conditions, continuing and transforming them, which is the only aspect, to my mind, which has anything in common with European linguistics.

Although I will deal with all problems to be discussed in this paper from the viewpoint of generative grammar, I will not provide an exposition of its conceptual apparatus, but rather take up only particular points where they become relevant in the course of discussion.[1] I shall ignore also, in general, the above mentioned alternatives within the general framework of generative grammar.

In order to shed some additional light on the contrasting features recognizable in the European background, I will first give a brief recapitulation of some problems arising from the American tradition. I would like to stress in advance, however, that several problems which have been widely discussed in connection with the theory of generative transformational grammar are in fact not particular claims of this theory, but rather general assumptions presupposed by any attempt to construct a linguistic description of a particular language and a general theory of language according to which particular descriptions can be made. That a language must be considered as an unlimited range of possible phonetic structures paired in a specific way with an unlimited range of semantic interpretations; that this sound-meaning correlation cannot be specified by a simple listing of linguistic expressions together with their semantic interpretations because of the unbounded range of this correlation; that the native speaker of a given language knows this sound-meaning correlation for any arbitrarily chosen expression and that he must rely for this knowledge on effective construction; that nevertheless phonetic and semantic representations cannot be mapped on each other directly in any systematic way, but must be mediated by intervening structures: these are some of the basic, preliminary assumptions to be justified by very general empirical and methodological considerations. Though they seem to be uncontroversial and should be acceptable to any linguist, we will see below that some of them have been ignored or even denied by different schools of modern linguistics. Since presuppositions of this type have been formulated explicitly in

[1] A complete account of the theory of generative transformational grammar, even in a condensed form, would be a large topic on its own. Expositions on different levels of technicality are available, e.g. in Chomsky 1965, 1966b; Katz 1966; Katz and Postal 1964; Bierwisch 1966.

connection with certain specific tenets of generative transformational grammar, they have often been taken as claims characteristic for a particular school, which they in fact cannot be.

II

The theory of generative transformational grammar, basically formulated by Chomsky (1955) and first published by Chomsky (1957), grew out of the tradition of American structural linguistics. With a few exceptions all the contributions to its further rapid development are due to American scholars. It would nevertheless be wrong to consider it — as has often been done — as a typically American phenomenon. In fact, its essential character has little in common with the behavioristic background of almost all other trends in contemporary American linguistics. Chomsky (1964, 1966a, 1968) has made it increasingly clear that the basic tenets of generative grammar can best be understood as an elaboration of quite traditional problems, in particular those that have been at the core of the ideas of philosophical grammar from the 17th until the 19th century, an elaboration, which of course deals with these problems on the level of modern scientific standards, developed in part by the methods of structural linguistics. What Chomsky has in mind when he refers to the tradition of philosophical grammar is a theory of language which attempts not merely to describe or arrange observable linguistic data according to certain systematic criteria, but explains such data on the basis of essential principles underlying the cognitive capacity of man as it manifests itself in natural language. These principles are to be explicated formally in terms of formal and substantive linguistic universals. The formal universals consist of a set of linguistic levels on which the different aspects of the structure of linguistic expressions are to be represented and a characterization of the general form of possible grammars, i.e. of systems of rules, which specify the structural aspects and their interrelations for the expressions of given languages. This in turn involves a formal account of the types of rules occurring in a grammar; of the different components of a grammar and the ways in which they are related to each other; of the principles of rule ordering within these components, and of the manner of rule application. The substantive universals comprise first of all a specification of the basic, primitive elements which might appear in grammars and structural representations of arbitrary languages. These are in particular the universal system of phonetic features, established in universal phonetics, the (as yet little understood) system of basic semantic components, to be established by universal semantics, and the set of universal syntactic categories and features. Since it turned out that a relevant set of the grammatical rules is universal not only with respect to its formal character, but also with respect to the particular regularities which these rules express, they can be extracted from the particular grammars. Thus the substantive universals also comprise a certain substructure of the system of individual rules that function in grammars of individual languages. Obviously this fairly rich system of formal and substantive universals imposes rather

strict limitations on the form and the content of particular grammars that can be constructed in accordance with them. It is thus an elaborate hypothesis about the class of all possible natural languages, which explains, if it is right, the highly specific properties of natural languages in terms of these underlying principles.[2]

The linguistic universals in this sense reconstruct the traditional notion of universal grammar as opposed to particular grammars of individual languages. Notice that universal grammar, if construed in this way, is not simply the intersection of possible particular grammars. (Then it would become more and more empty, as more and different languages were taken into account.) It is rather a set of highly specific conditions according to which the necessary information about properties of given particular languages is to be organized in individual grammars, by means of the linguistic universals.[3] It is in this sense of the notion of universal grammar that the theory of generative grammar is concerned with the principles of cognitive capacity: the universal grammar describes the structure of the general human ability to acquire an arbitrary language, just as a particular grammar describes the particular tacit knowledge resulting from the acquisition of a given language. However, the fact that Chomsky takes up essential ideas of philosophical grammar, does not give us the slightest reason to consider the theory of generative grammar as a continuation and extension of a European tradition. This is unjustified for at least two reasons. First of all, insofar as this tradition was not simply buried during the last century of European linguistics, it does have a character rather different from that which

[2] Thus all natural languages exhibit e.g. an internal hierarchic organization of their sentences and, moreover, specific relations between sentences — such as active/passive, assertion/question/imperative — which are determined by highly complex operations based on precisely this hierarchic organization. These facts are explained by the claim that the syntactic component contains phrase structure rules which specify the hierarchic organization of certain basic structures, and transformational rules which are structure-dependent operations on these representations. Further complicated facts are explained by particular conditions on the operation of transformational rules. The transformational rules also account for the possibility of relating a rather abstract level of syntactic deep structure, on which the semantic interpretation of a sentence is based, to a more superficial syntactic surface structure determining its phonetic shape. They thus explain the observation made above that there is no direct sound-meaning correlation in natural languages, but that this correlation must rather be mediated by intervening syntactic structures. The linguistic universals embody also implicational claims of the type 'if a language has property A, then it has in general also property B'. Thus the universal system of phonetic feature incorporates, for instance, a formal explanation of the fact that if a language possesses a velar nasal, then it possesses also a dental nasal, but not necessarily vice versa.

[3] Notice that even a very strong set of linguistic universals might not fully determine a unique particular grammar for a given language. Though a given particular grammar uniquely determines a certain language, there may be several or even an infinite number of grammars for one language. As a complement of universal grammar one needs therefore a criterion for evaluating different grammars that are equally compatible with the given language — or more precisely: with the corpus drawn from it. This criterion of evaluation is bound to the linguistic universals in a specific way. It depends on them insofar as it can evaluate only properties provided for by the universals. And it controls the formulation of universals insofar as these must be chosen in such a way that the evaluation procedure based on them leads to an empirically justified decision. For detailed information see e.g. Chomsky 1965 and Chomsky and Halle 1965. In the rest of this paper I will use the term universal grammar as referring to the set of linguistic universals controlled by the evaluation criterion.

Chomsky refers to. We will discuss this difference briefly in the next section. Secondly, generative grammar simply did not originate in the context of the European tradition, but arose from a critical analysis of contemporary American achievements. Only later did Chomsky and others point out that their ideas were in fact related to a great historical background.

For the purpose of comparison, it is worthwhile to notice briefly the place of the conception of generative grammar in its early stages among the views dominating American linguistics at that time. Besides the important idea of grammatical transformations advanced simultaneously by Harris and Chomsky, though with rather different implications, there is, as far as I can see, only one point where the development of generative grammar shares typical features of contemporary American linguistics. I am referring to the skeptical attitude towards the relevance of meaning in Chomsky's earlier writings. Within the Bloomfield-Harris tradition, the poor understanding of semantic problems has not been taken as a basic challenge, but rather as an indication that linguistics should be constructed as a science which does not suffer from the chaotic field of meaning. In a similar vein the discussion of the syntax-semantic relationship within the framework of generative grammar was originally focused on the question how syntactic notions could be established independently of semantic considerations.[4] The situation changed very soon, however, and at least since Katz and Fodor (1963) attempted to formulate the outline of a semantic theory, problems of meaning became an integrated topic of generative grammar. This does not mean, of course, that since then the understanding of these problems has been radically improved. In fact, a good deal of skepticism with respect to the overwhelming difficulties has rightly been preserved. But the lack of knowledge in semantics in comparison to the achievements in syntax and phonology is now conceived of as a serious gap in the theory, and not as a linguistically irrelevant fact. The focus of attention to the syntactic-semantic relationship is now on the question of how semantic interpretation is determined by syntactic properties.[5]

In all other respects, the theory of generative grammar reflects typical properties

[4] In this early period the task of a grammar was usually formulated as the enumeration or generation of all (and only) the sentences of a given language, where a sentence was taken as a formal syntactic object together with its phonetic interpretation. Only later on was a grammar characterized as a system of rules that specifies the sound-meaning correspondence for the sentences of a language. Though these formulations do not contradict each other, the later including the former, they are indicative of the focus of interest.

[5] At present there are three views under lively discussion with respect to this problem: Katz (1967) assumes that syntactic deep structure is the only level relevant for semantic interpretation. Chomsky (1972) claims that semantic interpretation is based on syntactic deep structure, but partially determined also by certain aspects of syntactic surface structure. McCawley (1968a) denies the existence of an autonomous level of syntactic deep structure and assumes that the semantic representation must be taken as the proper underlying representation directly related to syntactic surface structure by fairly complex syntactic transformations. (The choice of references here is somewhat arbitrary: there is in fact a fairly large number of papers on this subject.) These three positions represent different claims to be tested against empirical data, different assumptions about formal universals within the common framework of generative transformational grammar.

of contemporary American linguistics merely in the form of critical discussions. Examples are the analysis of the status of the so-called discovery procedures in Chomsky 1957, the critique of the principles of taxonomic phonemics in Halle 1959 and Chomsky 1964, the discussion of the limitation of constituent analysis in Postal 1964. The inadequacies that these and many other discussions have revealed in numerous details are consequences of the fact that all the theories criticized are based essentially on the following assumptions: a language can be described by segmenting given utterances according to certain criteria and classifying the resulting segments in terms of their cooccurrence and distribution; the criteria admitted must be identifiable in terms of external stimuli or external behavior of native speakers. These assumptions in turn do not follow from empirical considerations, but from methodological prejudices, viz. that the basic notions of a theory — segmentation and distributional classification — should be as general and simple as possible, and that all criteria should be reducible to objective, i.e. physical data.[6]

These principles sharply contrast with the ideas of universal grammar as mentioned above. Instead of keeping the general claims as empty as possible, universal grammar is looking for the strongest and most detailed universal concepts compatible with the known data. These concepts are not based on arbitrary methodological assumptions — such as the vague notion of simplicity or physical objectivity — but are subject to empirical motivation. And finally universal grammar is not antimentalistic, but takes mental phenomena as its proper subject matter, the physical data being reflexes of this.

Notice that the principles of segmentation and classification, in spite of the antimentalistic character which they are given in the Bloomfield tradition, can and must be interpreted as a claim concerning the cognitive capacity involved in language acquisition. And they are, indeed, closely related to basic assumptions of behaviorist psychology. Viewed in this way, they contribute to a precise explication of a very general conception of language learning, and of learning in general, which assumes that linguistic capacity is based on only a few general preconditions such as segmentation, classification, and association of given stimuli. It is in this sense that Chomsky (1968) has recently claimed that the main merit of structural linguistics is that it led to the definite falsification of this theory of language learning: since it has been shown that the principles of segmentation and classification cannot account for certain essential properties of natural languages, any theory of language acquisition based on these principles must be discarded.

[6] These two principles, taken as the cornerstone of a misleading methodology, led to awkward consequences. Because of the antimentalistic prejudice, only concepts established by means of physical criteria were taken as reflecting properties of the described phenomena, whereas all other, more derived notions (such as e.g. syntactic construction, subject, predicate, etc.) were considered as arbitrary constructs without any other significance than that of providing for a compact restatement of the given data. Thus the description of a language could be nothing but an arbitrary, though in some undefinable sense convenient, arrangement of data, precisely because of the equally arbitrary principles on which it was based.

These general implications for the theory of cognitive capacity indicate a deep-seated level of contrast between generative grammar and structural linguistics. This contrast, which underlies many of the differences in important details, concerns not only particular claims of generative transformational grammar, but also some of the general presuppositions mentioned in section I. It receives a somewhat different character, however, if generative grammar is compared with the European variants of structural linguistics, for two reasons: the European schools were scarcely influenced by behavioristic psychology and did not, therefore, share the antimentalistic axiom; and they retained a little more of the spirit of universal grammar. We will see the consequences below.

Turning now to the European scene which the theory of generative grammar entered in the late fifties, I will first concentrate on the theory of Glossematics as summarized by Hjelmslev (1953) and Uldall (1957). This theory gives the most explicit and rigorous formulation of all the ideas that dominated the development of linguistics initiated by de Saussure. Some apparent differences between glossematics and other concepts, in particular those of the Prague School, will be considered later.

III

According to Saussure a language is a system of signs organized by two types of relations: syntagmatic relations connect elements within a given sentence (or any other combination of signs); paradigmatic relations[7] combine elements capable of occupying identical syntagmatic positions or functions. A sign in turn is an interdependent combination of a content form and an expression form, which impose a structure on the content substance and the expression substance, respectively. This view is accepted, extended and refined by the theory of glossematics. The notions involved are reconstructed in a strictly formal and uniform way in terms of a few basic concepts. The resulting system is a very general algebraic structure of a certain type providing the framework for the description of any particular language. This glossematic algebra is understood as a deductive theory which specifies the class of all possible languages[8] and thus has a status very much like the set of formal universals in the theory of generative grammar. Uldall (1957:35), for example, points out that 'a deductive theory is no more than a very general and very elaborate hypothesis. Just as the ordinary hypothesis selects and limits the "facts" to be examined,

[7] The term 'paradigmatic relations' has replaced in later authors Saussure's original term 'rapports associatifs' in order to avoid its psychological implications. Notice, however, that this antipsychological terminology has nothing to do with antimentalism. Its rationale is only a precaution for avoiding a meaningless and confusing psychologism which suggests pseudo-explanations. The awareness that linguistic facts are essentially mental phenomena underlies all Saussurian tradition.

[8] In fact, it is intended as a specification of the more general class of all semiotic systems and even other social phenomena. We will discuss some implications of this problem below. For the time being we may consider the glossematic theory as concerned with natural language only.

so does the theory select and limit the terms in which particular descriptions shall be made and thus the laws that can be framed by induction from the sum of particular descriptions'. In spite of this similarity between glossematics and generative grammar with respect to general premises, there are still certain important differences, discussion of which might bring up some interesting problems. Before turning to these questions, we must consider briefly the basic notions of glossematic theory. We may do this by giving a rough and informal sketch.

First of all Saussure's notions of *signifiant* and *signifié* are generalized to those of expression plane and content plane, extending over signs of arbitrary length and complexity: phrases, clauses, sentences, and even paragraphs and whole texts. The two planes are connected by the sign function. Both consist of two strata, called form and substance, where the form is manifested by the substance. The substance is no longer considered an amorphous mass, as in Saussure's view, but as being organized according to independent principles. The primary concern of linguistics, however, is the structure of the form on both planes. In Hjelmslev 1954 the strata of substance are further subdivided into three possible 'niveaus': 'niveau d'appréciations collectives', 'niveau sociobiologique', 'niveau physique', the first of which is the linguistically most relevant one. There are some interesting problems relating to this subdivision. I must ignore it for the most part, however. Underlying each text is a system according to which the text can be analyzed into parts and functions connecting the parts. Since a text has a content side and an expression side, it is based on a content system and an expression system. The structure of a text is a hierarchy of chains, the structure of a system is a hierarchic arrangement of categories, to which the components of the text belong. A text can be extended without any upper limit. The relation between a (possibly infinite) text and the underlying system is similar, but not identical with, that between a language and its grammar in terms of the theory of generative grammar.[9]

The analysis of a given text is based on a system of functions. It might be illustrated by the following oversimplified example:

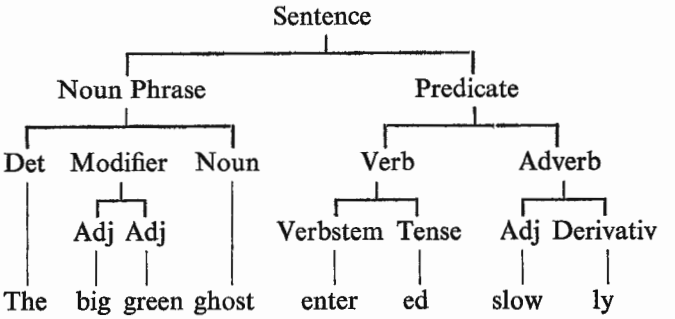
1. A The big green ghost entered slowly
   B The big green ghost C entered slowly
   D The E big green F ghost G entered H slowly
   I big J green K enter L ed M slow N ly

A is a member of the category of all sentences. It is analyzed into the two syntagmatic classes or chains *B* and *C* which in turn are members of the categories of, say, all noun phrases and predicates, respectively. *B* is then analyzed into *D*, *E*, and *F*,

[9] Thus Uldall (1957:33) states: 'if your description of a text [i.e. the postulated underlying system] is correct, you should be able to deduce from it any number of new texts acceptable to native speakers.' The procedure of deducing a text from a given description has not been formalized, however, within glossematic theory. We will propose a formulation of the relevant concepts below.

members of the categories of the determiners, modifiers, and nouns, respectively. Each step in this procedure analyzes a class into its components; the whole procedure is called a deduction. Such a deduction from the chain *A* based on the underlying paradigmatic system, is in some respect equivalent to what is called in generative grammar a derivation of the string *A* based on a corresponding phrase structure grammar. Thus the deduction given in (1) can be represented in an obvious way by the following phrase marker, where the node labels correspond to the categories to which the strings *A* through *L* belong:

2.



The components into which a chain is analysed are related to each other by one of three general functions. A function is a connection between two functives. If both functives are necessary in order to establish a member of the category, then the function is called an interdependence. If one is necessary, and the other is optional, then the function is a determination. Two optional functives are combined by a constellation. Thus *B* and *C*, for example, are functives of an interdependence. *E* and *F*, or *G* and *H* are functives of determinations. *I* and *J* are functives of a constellation. A necessary functive is called a constant, an optional functive is a variable. Hence *B*, *C*, *F* and *G* are constants, *H*, *I*, and *J* are variables. Notice that our example (1) gives a deduction on the content plane whose elements are completely abstract entities and must not be confused with their orthographic representations. Even their linear ordering is merely an accidental property of the representation we have chosen, not a constitutive aspect of the content plane which is organized by the indicated functions only. It is true that each chain or component of the content plane is interdependently connected to some component on the expression plane, which displays a linear ordering, but these components are organized according to their own hierarchy. The deduction of a chain on the expression plane leads to such categories as intonation clause, accent group, syllable, phoneme. It is a central claim of glossematics that the interdependent hierarchies on the content and expression plane are organized according to identical principles, but that they do not conform in detail. Thus whereas *entered* is analyzed on the content plane into the stem 'enter' and the past tense morpheme, these not being phonemic sequences, it would presumably be analyzed on the expression plane into the two syllables *en* and *terd*. This disconformity of

content and expression brings up another central claim of glossematics. Because of the autonomous organization of both planes the deduction of a chain must not stop at entities whose content and expression conform, i.e. signs. It must rather proceed to smaller units, called figurae. Thus sign expressions are analyzed into syllables, phonemes and finally simultaneous parts of phonemes. These correspond by and large to distinctive features, though they have a completely different theoretical status.[10] Sign contents are analyzed into grammatical and lexical morphemes — taken in the sense of abstract content forms — and finally components corresponding roughly to syntactic and semantic features.[11] Hence the deduction in our example (1) would have to proceed by analyzing e.g. *slow* into components such as 'rate of change' and 'low degree', etc. These components are part of the same syntagmatic hierarchy, corresponding somehow to the semantic and syntactic features assigned to syntactic formatives in syntactic deep structures of generative grammar. This then leads to the important claim that a language is not a system of signs, but a system of figurae, these being organized on two planes, where it is the figurae, not the signs which are interdependent. Thus, if we were to substitute e.g. the content figura 'low degree' in our example by the figura 'high degree', this would entail a simultaneous substitution of *slowly* by *fast* on the expression plane. The ultimate functives emerging in a deduction are called glossemes. Thus glossematics is the algebraic theory of glosseme combinations.

The last point to be taken up here is the assumption that the underlying paradigmatic system is organized according to the same principles that we have illustrated so far. As already noted, each chain is a member of a particular category which is defined by the syntagmatic functions into which its members may enter. Thus a paradigmatic system is a set of categories determining the syntagmatic functions of their members. It is organized again by the three types of functions introduced above. This assump-

[10] Whereas distinctive — or more precisely phonetic — features as used in generative grammar are based on the linguistic relevance of particular phonetic, i.e. articulatory and auditive parameters, glossematic elements are motivated exclusively by a systematic partition of expression forms. This is a consequence of the fact that in glossematics the analysis of linguistic form is strictly separated from the analysis of substance. Whether and how the units of form are finally manifested by elements of substance that can be characterized universally, by a universal system of phonetic features for that matter, is a completely different problem. The problems resulting from this separation of form and substance have never been dealt with in any detail in glossematics (but see footnote 11). They pose enormous difficulties and are, to my mind, completely meaningless since they are motivated only by a priori assumptions. We return to this question below.

[11] These final content figurae are again purely formal units whose interpretation in terms of cognitive and perceptual parameters and properties is taken as a separate problem. It must be admitted, however, that in the case of syntactic and semantic features this situation is practically the same in generative grammar (and any other attempt): because of the complete lack of insight into a theory of universal semantics, semantic features are motivated exclusively by analyzing and comparing linguistic units. No principled relation to cognitive or perceptual properties has been established so far. (For some vague hints in the case of space perception see Bierwisch 1967.) An attempt in this direction on the basis of glossematic assumptions has been made by Hjelmslev (1935) with respect to case features. Though it raises a lot of interesting and still unexplored problems, it seems to me that the general approach is wrong for several reasons which cannot conveniently be discussed here.

tion may be illustrated by the following example. Past and present are interdependent members of the category tense of English since there are no verbs that do not combine with both past and present. Thus both are paradigmatic constants. Imperative and indicative, on the other hand, are connected by a paradigmatic determination, since there are verbs combining with the indicative but not with the imperative (roughly stative like *know* etc.). Hence imperative is a paradigmatic variable with respect to the indicative, which is paradigmatic constant. And finally particles like *on, up, out* etc. are correlated by paradigmatic constellations, since there are always syntagmatic combinations where the one appears, while the other may not. They are thus paradigmatic variables with respect to each other.[12] Similar examples could be given for the expression plane. Finally the general relations between content and expression and form and substance are defined by means of the same primitive notions: the two planes of language are constants in an interdependence, viz. the sign function, form and substance are the constant and the variable in a determination, viz. the function of manifestation. It might be added that even such notions as connotative, denotative, and metalanguage are explained in terms of the same underlying concepts. I cannot go into these problems here. For details see Hjelmslev (1953:chapter 22).

The essential point of glossematic theory can now be summarized as the assumption that all the concepts of the fairly complex algebraic system which is set up to account for the properties of the class of all semiotic systems are based on a small set of primitive terms, viz. class and component, function, necessary and not necessary functive, both/and and either/or function, and certain empirical assumptions, in particular that there are two non-conforming hierarchies, viz. the content and the expression plane, and that each plane consists in turn of two non-conforming hierarchies, viz. form and substance. We might now look at the claims made by this system of formal universals from the point of view of generative grammar.

[12] A more detailed specification of the notions of paradigmatic interdependence, determination, and constellation, and of paradigmatic constant and variable, on which they are based, must rely on the concept of paradigm, from which the notion of category is derived in the following way: two or more elements or chains form a paradigm if they can alternate in a given syntagmatic connection. Two or more corresponding paradigms are then said to form a category just as two or more corresponding chains form a paradigm. Two paradigms or chains correspond, if they are defined on the same level of the syntagmatic hierarchy, and have certain components in common. (I need not give here a precise definition of correspondence.) Now a syntagmatic constant is an element which appears in all corresponding chains of a paradigm, a variable is an element which does not. A paradigmatic constant is an element which appears in all corresponding paradigms of a category, a paradigmatic variable is an element which does not. Thus syntagmatic functions are defined via sets of chains and specify relations within these chains. Paradigmatic functions are defined via sets of paradigmatically arranged sets of chains and specify relations within these sets of chains. For details see Uldall 1957. On this basis glossematic theory arrives also at a precise, formal definition of the notion of syntagmatic and paradigmatic relations, the former being both/and functions, the latter either/or functions. Notice, by the way, that two or more categories can be components of a category. Thus the paradigmatic system consists of hierarchies of categories, just as a syntagmatic system consists of hierarchies of chains. For example, the category of all the phonemes of a given language may consist of the two categories of vowels and consonants. The latter in turn may consist of the categories of those that can form a syllable nucleus (roughly liquids) and those that cannot, etc. A hierarchy of categories can again be represented by a labelled tree, corresponding e.g. to the feature trees sometimes used in generative grammar to present feature hierarchies.

We notice first of all, that the formal structure of each stratum provided in glossematics is equivalent to a phrase structure grammar and the set of derivations specified by it.[13] It is, more precisely, equivalent to a context sensitive grammar, for the following reason. The syntagmatic function into which a functive may enter is either homosyntagmatic or heterosyntagmatic. The former contracts two components of the same chain, the latter contracts a component of one chain with a component of another chain within the same text. Thus there is e.g. a heterosyntagmatic determination between person and number of the subject noun phrase and person and number of the verb phrase. A case in point on the expression plane is the subordination of secondary to main stress. Heterosyntagmatic determinations and interdependencies must be accounted for by context sensitive rules. A formal proof of the asserted (strong) equivalence between glossematic algebras and context sensitive phrase structure grammars cannot be given here since it would require too much detail. The concepts on which it could be based are as follows.

P is a paradigmatic system with $C = \{A_1, \ldots, A_n\}$ as its categories defined by syntagmatic functions and $G = \{a_1, \ldots, a_m\}$ as its primitive terms, i.e. glossemes.
X is the set of all finite strings over G.

If $x = wyz$ for $x \in X$, then y is a member of $A \in C$ in x if y exhibits all and only the syntagmatic functions to w and z by which A is defined. (w and z might be empty.) A is a categorial representation of y (in x).

y can be directly deduced from x, symbolically $x \rightarrow y$, if k is the smallest number such that:
(i) $x = vzw$ and $y = vz_1 \ldots z_k w$ and $z = z_1 \ldots z_k$
(ii) $z, z_1, \ldots, z_k$ are members of $A, B_1, \ldots, B_k \in C$ in x respectively.

In this case $x \rightarrow y$ directly deduces the categorial representation $B_1 \ldots B_k$ for z in x.

y can be deduced from x, symbolically $x \Rightarrow y$, if $x = x_1$ and $y = x_n$ and for $1 \leqslant i < n$ $x_i \rightarrow x_{i+1}$.

The set of all categorical representations deduced by $x \Rightarrow y$ is called a categorial system.

$x \Rightarrow y$ is a complete A-deduction of x, if

[13] That this structure characterizes not only the formal strata of the content and the expression plane, but also the corresponding strata of substance, follows from the glossematic definitions. What such a structure would be in the case of particular phonetic or semantic facts must be left open. There are no glossematic studies showing any details or even examples with respect to this problem. The focus of glossematic investigations has always been on the formal strata, and even there only selected problems have been dealt with. In fact, the laek of any coherent description of at least a fraction of a given language based on and illustrating the glossematic theory is certainly a major flaw in the whole development. Togeby (1951) gives a description of French that is certainly in the spirit of the glossematic theory, but it is by no means a rigorous application of the theory. — For the formal theory of phrase structure grammars see e.g. Chomsky 1963.

(i) x is a member of A

(ii) $y = y_1 \ldots y_r$ and for no y_i $(1 \leqslant i \leqslant r)$ there is a z such that $y_i \Rightarrow z$, i.e. the y_i are either glossemes or strings of glossemes that have no deduced categorial representation with respect to C.

The categorial system deduced by a complete A-deduction of x is the complete categorial system CS(x) of x. CS(x) can obviously be represented as a labeled tree with A as its root.

Each direct deduction furthermore imposes a set of syntagmatic functions on the strings deduced by virtue of the functions that define the categories which enter the categorial representation. Let FS(x) be the set of all functions imposed on x by its complete A-deduction.

We might say now that a paradigmatic system P admits a chain x over G and assigns to x a CS(x) and an FS(x), if there are substrings $x_1 \ldots x_r$, such that $x \Rightarrow x_1 \ldots x_r$ is a complete A-deduction of x. $L(P)$ is the set of all x admitted by P.[14]

Given now the notion of a phrase structure grammar G generating a string x with the structural description D, where L(G) is the set of all x generated by G (these notions are readily defined in the theory of phrase structural grammars), then the equivalence in question can be expressed by the following theorem:

THEOREM. A context sensitive phrase structure grammar G generates a string x over the terminal vocabulary G with the structural description D if and only if there is a paradigmatic system P which assigns to x a CS(x) and an FS(x), such that D and CS(x) correspond to each other in an obvious way, and $L(P) = L$(G).

We have sketched the framework within which this theorem might be proved. The crucial point of such a proof is to reconstruct in terms of phrase structure grammars the syntagmatic and paradigmatic functions for an arbitrary system P and the restrictions that these functions impose on the strings and structural descriptions admitted by P.[15] Notice that the existence of heterosyntagmatic determinations and

[14] It is claimed in glossematic theory that each deduction starts with a whole text. This would mean that C must contain a designated category 'Text' and that A would be this designated category. $L(P)$ would be thus the set of all texts admitted by P. In generative grammar on the other hand, the designated initial category is 'Sentence', and L (G) for a given grammar G is the set of generated sentences. For the time being I am not concerned with this distinction. The defined notions $L(P)$ and L (G) correspond sufficiently, even if there were no designated initial category at all. $L(P)$ would then simply contain also the set of all constituents. It might be noted, by the way, that in spite of its theoretical claim, glossematics has scarcely revealed empirical facts bearing on the preference of texts instead of sentences as the scope of linguistic analysis.

[15] The details of this reconstruction are rather clumsy. I can give here only a hint of the lines along which it can be done. Assume that all chains x_i that are members of category B are either of the form $y_{i_1}y_{i_2}$ or simply y_{i_1} with y_{i_1} and y_{i_2} being members of C_1 and C_2, respectively In this case each chain y_{i_2} is a syntagmatic variable with respect to x_i and hence C_2 a variable category defined by syntagmatic determination. This situation is to be reconstructed within a phrase structure grammar by including the two rules $B \to C_1\ C_2$ and $B \to C_1$ or simply the rule schema $B \to C_1\ (C_2)$, where finally C_1 and C_2 dominate the strings y_{i_1} and y_{i_2}, respectively. In this sense each determination and interdependence between either categories, i.e. sets of strings, or particular terminal strings of the paradigmatic system P, must be rendered by appropriate sets of rules of the equivalent grammar G.

interdependencies require G to contain context sensitive rules. Without these functions the above theorem could be strengthened to context free grammars.

Given the equivalence discussed so far, we can conclude that the theory of glossematics makes empirically inadequate claims with respect to the formal properties of natural languages: it has been demonstrated several times within the literature of generative grammar, most extensively in Postal 1964, that the theory of phrase structure grammar cannot account for the principles according to which the syntactic structure of natural languages is organized. Hence, whatever the general premises and the additional claims of the theory might be, it is inadequate insofar as its basic assumptions are bound to the limitations of (context sensitive) phrase structure grammars.

The second point to be noted with respect to the glossematic theory is its exclusive concern with problems of representations of linguistic structures and the complete absence of the notion of grammatical rules by means of which these representations can be constructed. This flaw, which has far-reaching consequences, is characteristic not only of the theory of glossematics, but of all other trends of structural linguistics in Europe, and also in the United States before the appearence of generative grammar. Just like glossematics, all these schools are concerned with the question of how the presumed structure of a given utterance might be represented, what types of elements and classes may appear in such representations, and how the inventories of these elements and classes can be represented. This statement might be surprising in view of the fact that I have sketched a fairly plausible way to reconstruct a glossematic algebra in terms of a context sensitive grammar and have asserted, moreover, the strong equivalence of both. And how the rules of a grammar are formulated is, of course, not an essential point, they may very well be given in the form of a set of interrelated categories. But notice that we have modified somewhat the way in which a glossematic algebra is set into operation. The notion of deduction, on which our reconstruction is based, is originally understood as an operation which assigns a structural representation to a given chain on the basis of certain general principles (which are explicitly formulated in glossematic theory[16]), the general form of possible descriptions, and the system of categories eventually established in former deductions. This means that the deduction of any new chain may possibly lead to a change in the system of categories established so far, if the new chain must be considered as well formed for empirical reasons, but cannot be accounted for by the already given categories. Thus the glossematic concept of deduction works in two ways: looking 'backward', on the set of chains already analyzed and those exhibiting the same structure (and this might very well be an infinite set), it corresponds to the notion of generating sentences in terms of generative grammar; looking 'forward' to expressions structurally different from those already encountered, it is a formalization of the process of grammar construction incorporating the claim that the resulting

[16] These are the so-called principles of analysis, reduction, economy, simplicity, generalization, and exhaustive description. We need not discuss them here in detail, though they contain some interesting general assumptions. Some of them will be taken up below.

system is always a constituent structure grammar.[17] We have picked up the first aspect of the concept of deduction for the above comparison of phrase structure grammars and glossematic systems. This possible interpretation and the fact that glossematic descriptions are meant to account for infinite sets of sentences must not obscure its exclusive interest in representing structures and registering elements, categories, and functions. The lack of an understanding of the essential role of grammatical rules becomes more obvious if we consider not the formal organization of separate strata, as we have done so far, but the interrelation of several strata.

In order to characterize the structure of an infinite set of sentences (or texts), it is of course not sufficient to specify the representations on the different levels, or strata, but it is also necessary to specify their mapping on each other. No such attempt has ever been made within the glossematic framework.[18] This is, to my mind, a direct consequence of the assumption that the deductive description of a text is nothing but a registration of the elements and functions involved: though it is quite possible to list all the components of the four strata of a given utterance and even the interdependence between components of the content and the expression form, there is no reasonable way, however, within the glossematic framework to specify constructively these interdependencies for an infinite set of sentences or texts. Certainly the glossematic theory implies a way in which this specification would have to

[17] This twofold character of the concept of deduction implies, incidentally, the interesting claim that the two psychologically different operations of sentence recognition by the hearer and of language learning are essentially of the same character with the only difference that the former uses those entities and categories that have been already established and used in former processes. In other words, glossematic theory claims that there is no difference in principle between models for language users and language acquisition, and moreover, that language use is intimately related to language learning. Viewed in this way, the glossematic concept of deduction implies the weighty assumption that there is, at least with respect to semiotic systems, no basic formal distinction between rule governed and rule changing behavior, a distinction whose importance has been brought to attention by the theory of generative grammar. Though such questions have not been considered explicitly in glossematic writings, this claim deserves some attention, since it is not bound to particular assumptions with respect to the types of grammars involved, and since it is by no means an a priori truth that language use and language acquisition are based on formally different mechanisms. Thus from glossematic theory it would follow, for instance, that language use is governed by the same principles — e.g. simplicity, reduction, generalization — as language acquisition, though these principles would mostly operate without any particular effect in language use. Considerations of this type would have some bearing on still open questions concerning the nature of the evaluation procedure as conceived in generative grammar (cf. fn. 3 above), in particular on the claim, challenged in McCawley 1968b, that the postulation of grammars on the basis of collected data and the evaluation of the grammars are separate, successive operations. These problems do not depend on the particular criterion on which the evaluation is based. Notice, incidentally, that the aspect of grammar construction yields a parallel between glossematic deduction and the concept of discovery procedures mentioned in section II. There is however an important difference. Whereas discovery procedures are based on inductive generalization, glossematic deduction is always based on the process of justifying given hypotheses, or functional categories for that matter.

[18] Not even for fragmentary descriptions of particular languages. Where problems of this type have been taken up, e.g. in Bech 1955, considerable changes in the theory have been necessary. Thus Bech introduces certain notions which come near to the concept of transformational rules, and which exceed on principle the power of glossematic algebra.

be given. But it simply leads to absurdity.[19] Though glossematic theory displays a reasonable understanding of the abstract character of syntactic and phonemic structures, it is not able to account in a natural way for the systematic interrelation of these structures and for their phonetic and semantic interpretation. This fact results directly from the lack of grammatical rules in general and of transformational rules in particular, because only transformational rules are capable of relating hierarchies to hierarchies in a systematic way.

The third point to be taken up here is the simplicity criterion proposed in glossematic theory. The 'principle of simplicity', which controls the construction of linguistic descriptions, reads as follows: 'of two self-consistent and exhaustive descriptions the one that gives the simpler result is preferred. Of two self-consistent and exhaustive descriptions giving equally simple results the one that requires the simpler procedure is preferred' (Uldall 1957:25). Comments on this principle indicate that by the description giving the simpler result, or, in short, by the simpler description, the one is meant which requires the smaller number of unanalyzable, primitive terms. This simplicity criterion is again not a feature peculiar to glossematics, but is shared, at least implicitly, by all schools of structural linguistics. It results from the fact that the main concern of linguistic theory has been considered to provide a formal system for representing the structure of arbitrary utterances and for specifying the items and categories involved. Given this goal, it seems natural to prefer a description which requires e.g. a smaller number of phonemes, or even distinctive features, over another one. We may call this the principle of minimal inventories. Suggestive as it may be at first sight, it can easily be seen that it leads to absurd results if it is not controlled by some additional considerations: each phonemic system for example can be represented by a set of combinations of only two items (as is done roughly in Morse code). Therefore the principle of minimal inventories is in general combined implicitly with what could be called the principle of natural (or simple) interpretation. Thus e.g. the set of distinctive features would not be reduced if the resulting elements could

[19] This way is roughly as follows. The four strata of a given text are considered separate syntagmatic hierarchies, related by the sign function and the function of manifestation, respectively. They are deduced in the first step of the deduction of a given text and must be considered as simultaneous, syntagmatically related hierarchies of chains. Hence the topmost categories of a paradigmatic system are 'Text', 'Text-Content', 'Text-Expression', 'Text-Content-Form', 'Text-Content-Substance', 'Text-Expression-Form', 'Text-Expression-Substance'. A generative grammar would have to reconstruct these assumptions by initial rules roughly like this: Text $\rightarrow$TC TE, TC $\rightarrow$TCF TCS_i, TE $\rightarrow$TEF TES_i, where TCS_i and TES_i are variables over the different possible substances (phonetic, graphic etc.). The further deductions would then be reconstructed in terms of largely context sensitive rules,where the context for the expansion of a given syntactic category is some component of the expression plane, etc. In other words, the expression form must be considered as the contextual condition under which particular categories or elements of the content form can be deduced, and vice versa. (Among these rules there would be many of the form N $\rightarrow$'man' / —— man, representing roughly the dictionary.) This reconstruction of glossematic assumptions reveals the implicit claim that the phonemic and phonetic form of a given sentence is a context condition of its syntactic and semantic structure, and vice versa. I don't know whether any meaning can be given to this claim. In any case, even if a description of this type were formally possible (I am not sure whether there are unsurmountable obstacles), it seems to be obvious that it leads to absurd artificialities and worthless descriptions.

not be assigned to a natural phonetic interpretation. Even glossematic description must rely tacitly on such considerations. But even with this additional condition the principle of minimal inventories is completely arbitrary and not motivated by any empirical considerations. It could easily be shown that strict application of the principle of minimal inventories would force one to incorporate in the description of a language certain important facts in an otherwise unmotivated manner.[20] It is in fact possible to think of many different principles for evaluating given descriptions. One might prefer e.g. the description that assigns to the generated or admitted sentences structural descriptions with the smallest degree of complexity in some definable sense of this term (call this the principle of minimal complexity); or the description that requires the smallest number of rule applications for the mapping of one level on the adjacent level (call this the principle of simplest mapping, a principle, by the way, that is not applicable in glossematics for the reasons discussed above), and many others. None of these criteria is a priori valid or invalid. The choice depends on theoretical and empirical considerations. I know of no convincing arguments in favor of the principle of minimal inventories. I am sure, moreover, that it must definitely be rejected for strong empirical reasons. Hence the glossematic principle of simplicity is either wrong or at least arbitrary as far as it depends on the principle of minimal inventories. And this is in fact its primary criterion. It is interesting, however, that the glossematic theory realizes the necessity of a further criterion because there may be two or more descriptions equally simple in terms of the minimal inventory criterion. This second criterion refers to the simpler procedure. Procedure is a well defined technical term in the glossematic theory, the most important being that of deduction as discussed above. Hence the simplest procedure is that which requires the smallest possible number of different direct deductions. Thus the glossematic principle of simplicity relies — given the minimal inventories — in the second instance on some aspect of simplicity of grammars or rule systems.[21] It must be noted, however, that this second criterion has no other motivation than the first one has: it is derived from methodological considerations of some sort, not justified empirically.

The last claim of glossematics with respect to formal universals that I will briefly discuss is the number of linguistic levels and their motivation. We have already noted that there are four strata, all of which display the same type of organization for which

[20] Assume, for instance, that the basic phoneme categories of a given language can be characterized either by the three features [consonantal], [vocalic], and [sonorant], or by the two features [consonantal] and [vocalic]. The principle of minimal inventories would force us to choose the second solution. But there may be some important regularities that could easily be formulated by referring to the feature [sonorant], whereas their description without it would lead to much more complicated statements, involving several feature combinations. Though such a situation could probably not arise in glossematic descriptions for reasons not relevant here, it shows sufficiently clearly that there is no a priori justification for the minimal inventory principle over several other criteria.

[21] What is involved here is, more precisely, that aspect of grammars (or categorial systems, for that matter) that specifies the particular hierarchical structures imposed on generated or admitted strings. It is hence closely connected to what has tentatively been called above the principle of minimal complexity. There is still another aspect of the glossematic simplicity principle that will shortly be taken up in section IV below.

we have asserted equivalence to context sensitive phrase structure grammars. The existence of four particularly interrelated levels is not assumed a priori, but based on very general empirical considerations. Logically there could exist systems with only two or three separate levels.[22] The empirical considerations are of the following kind. Natural languages show an obvious disconformity with respect to their extreme aspects, phonetic and semantic structure. The functives deduced in their analysis have no one-to-one correspondence. Hence two planes must be set up. Within each plane disconformity between two aspects must be realized. Hence the strata of form and substance are postulated. These very gross considerations rely on the a priori principle that it is a necessary and sufficient condition for establishing a new stratum if nonconforming hierarchies of components must be deduced from a given chain. This kind of motivation for different levels is obviously completely different from that characteristic in generative grammar where the justification of a linguistic level is based on considerations of roughly the following type. What types of independent representations are necessary and sufficient in order to account for the regularities observed in given languages in terms of most general sets of rules operating on the postulated representations? Thus types of ambiguity, alternations such as *Vater/Väter*, *Mutter/Mütter*, etc. complicated correspondences such as *Hans ist leicht zu verstehen* vs. *Hans ist bereit zu verstehen* may be crucial instances for justification (for detailed discussion see e.g. Chomsky 1964). One of the main sources of this widely differing attitude towards justification of postulated levels is the already mentioned lack of the notion of grammatical rules and constructive characterization of sentences on the part of glossematics. Because of this difference it would be extremely difficult and to a certain extent artificial to compare the levels postulated in generative grammar and in glossematics any further. Despite some superficial similarities, their status within the theory as well as the facts represented on them are too different for a revealing comparison.[23] It might be noted, by the way, that the assumption of four strata implies a

[22] The glossematic theory assumes in fact that there are such systems, but that these are not languages. Traffic lights form a simple example of a system that consists of only one stratum of form to which simultaneously a content and an expression substance are related. Systems with no separation of content form and expression form are called symbolic systems, in those cases where they have both an expression and a content substance. Games, on the other hand, comprise in general only two strata, a form and a substance. They are thus strictly monoplanar. Systems of only one stratum are not mentioned at all. They are presumably considered as phenomena of a different type, not belonging to the domain of social and behavioral sciences.

[23] There is, on the other hand, another great difference between the glossematic attitude and that of American structural linguistics. Since in the Bloomfield-Harris tradition linguistic levels are the product of inductive generalization — from phone to phoneme, from phoneme sequence to morpheme, etc. — they are supposed to meet such conditions as linear correspondence, phonetic similarity, etc. No such conditions obtain for the deductively established levels in glossematics. Quite to the contrary, Hjelmslev (1953:166) gives the following example from the expression plane: In French the formal segment *n* has a variant which is realized on the level of substance as nasality of the preceding segment, if this is a vowel. Thus the sequence *bon* on the level of expression form corresponds to the sequence *bõ* on the expression substance. This is in an obvious conflict with the conditions on taxonomic phonemics, but rather similar to an analysis in terms of systematic phonemics and systematic phonetics as proposed in generative grammar.

fairly strong claim on the part of the theory of natural language. It presupposes that every human being is able to organize linguistic experience according to four non-conforming levels composing, in turn, two interdependent planes with a constant form and a variable substance on each plane. Although this claim must be considered as wrong in the light of overwhelming evidence provided in the theory of generative grammar, it is by no means a trivial claim.

IV

The previous inspection of particular glossematic claims with respect to formal universals, as opposed to those of generative grammar, has already shown that they are determined to a large extent by general premises and assumptions. I will return now to some problems connected to these general assumptions.

In an early state of development of his theory, Hjelmslev (1929) considered linguistics explicitly as a particular branch of (cognitive) psychology which has to specify not only the structure of particular given languages underlying the concrete speech behavior, but also the general principles of these structures. He claimed that this specification must be done in a purely immanent fashion, relying only on the internal structure of the considered phenomena. The goal aimed at was a sufficiently rich system of formal and substantive universals,[24] i.e. a universal grammar in the sense sketched above. (The tradition meant is explicitly mentioned in the title *Principes de grammaire générale.*) Later on the goal was broadened and thus changed in a certain sense. Both Hjelmslev (1953) and Uldall (1957) consider the algebra of functions that they propose as a very general and uniform framework for the description of human (and probably even animal) behavior, social processes, phenomena of history, art, etc. Everything which can be considered as a process based on an underlying system of recurrent components organized in functional categories is taken as an object that can be described in terms of a glossematic algebra. In this respect glossematics is universal in a completely different sense than a theory of universal grammar can ever be. Here the question arises whether such a universality does not reduce the theory to emptiness, in much the same way as any conception based on segmentation and classification only. In fact, how worthwhile is a theory which comprises economics as well as bird song, natural language as well as chess, court ceremonies and eating behavior? One might argue that such a general system specifies the common traits of all systems of behavior and history, just as universal grammar specifies the common features of all natural languages. But notice that there is an

[24] The fact that we have been concerned here only with formal universals, which are of course more basic and more relevant for a comparison of the type undertaken here, must not obscure the interest of glossematics in problems of substantive universals. There is, in fact, a large body of literature on problems of this type, concentrating mostly on morphological categories such as case, number, gender, etc. Thus Hjelmslev (1935) proposes a very elaborate theory of possible case systems and their semantic interpretation. It would be an interesting study in itself to reconsider proposals made in these studies in the light of the theory of syntactic features developed in generative grammar

important difference here. Whereas universal grammar must be considered as a serious hypothesis about particular facts, viz. the human capacity to learn and use language, a generalization about all types of behavior and history expresses merely a methodological attitude. This might be of some interest, insofar as it provides a uniform frame of reference for social sciences in the broadest sense.[25] But one has to be careful not to exaggerate the relevance of such general systems (as is obviously the case in the present day structuralist movement, in particular in France), since they do not incorporate, by definition, any empirical insights besides the assumption that there is a general analyzability for a large class of phenomena.

There is, however, a less trivial aspect in the glossematic conception. Human languages are not only subsumed under the class of all semiotic and even nonsemiotic systems, they are also distinguished from non-languages by specific properties. They belong, first of all, to the class of systems exhibiting two planes with a diverging form, which is called the class of semiotic systems. By this property natural languages are distinguished not only from simple systems such as traffic lights, but also from probably all systems of animal communication, since these are not organized on two nonconforming levels.[26] Notice that as a direct consequence of their biplanar character semiotic systems are systems of figurae. Hence the essential difference between semiotic and other systems is not that semiotic systems are capable of forming indefinitely many new combinations, while other systems are not. (There may be on the one hand, semiotic systems with only a finite number of possible chains, and on the other hand symbolic or other nonsemiotic systems with indefinitely many possible chains or combinations.) The difference is rather the possibility of forming biplanar signs from monoplanar figurae.

Secondly, human languages are distinguished from other semiotic systems by the

[25] The glossematic theory, as already noted, makes the stronger claim that all phenomena included are ultimately based on systems equivalent to context sensitive grammars. This is, however, an a priori claim which ignores, moreover, possible differences: there are certainly not only systems requiring more powerful systems — such as natural languages — but also those which can be accounted for in terms of weaker ones such as context free grammars or finite automata. Such differences might help to characterize, at least partially, the specific properties of the phenomena involved.

[26] Thus Chomsky (1968:61) assumes that 'Every animal communication system that is known (if we disregard some science fiction about dolphins) uses one of two basic principles: Either it consists of a fixed, finite number of signals, each associated with a specific range of behavior or emotional state, as illustrated in the extensive primate studies that have been carried out by Japanese scientists for the past several years; or it makes use of a fixed, finite number of linguistic dimensions, each of which is associated with a particular nonlinguistic dimension in such a way that the selection of a point along the linguistic dimension determines and signals a certain point along the associated nonlinguistic dimension ... A communication system of the second type has an indefinitely large number of potential signals, as does human language. The mechanism and principle, however, are entirely different from those employed by human language to express indefinitely many new thoughts, intentions, feelings, and so on.' Obviously, both types of animal communication discussed by Chomsky show typical monoplanar organization and are therefore symbolic systems in the sense mentioned in footnote 22. The difference in mechanism and principle is then, at least partially, that between mono- and biplanar organization.

fact that their content form can be manifested by all purports, i.e. all possible content substances. In other words, a language is a semiotic system which is able to express everything that can be expressed at all. This characterization is given as a formal definition. Glossematic theory realizes, however, that it is a task of primary importance not only to define this property but to explain it in terms of the specific properties which account for it. In this connection, Hjelmslev (1953:109) writes:

> In practice, a language is a semiotic into which all other semiotics may be translated — both all other languages, and all other conceivable semiotic structures. This translatability rests on the fact that languages, and they alone, are in a position to form any purport whatsoever; in a language, and only in a language, we can 'work over the inexpressible until it is expressed' (Kierkegaard). It is this quality that makes a language usable as a language, capable of giving satisfaction in any situation. There is no doubt that it rests on a structural peculiarity, on which we might be able to cast better light if we knew more about the specific structure of nonlinguistic semiotics. It is an all but obvious conclusion that the basis lies in the unlimited possibility of forming signs and the very free rules for forming units of great extension (sentences and the like) which are true of any language ... in general, a language is independent of any specific purpose.

There is little doubt that Hjelmslev here comes to grips with one of the central topics of what Chomsky has called the tradition of Cartesian linguistics. Hjelmslev's particular treatment of this topic poses two interesting problems.

The first is that of the specific property itself that distinguishes human language from all other systems. Chomsky (1966a) discusses this very problem in terms of the 'creative aspect of language use'. The crucial fact about language is then that it provides the means for this creative use. The aspect of creativity is in turn an outcome of the following fact: 'in its normal use, human language is free from stimulus control and does not serve a merely communicative function, but is rather an instrument for the free expression of thought and for appropriate response to new situations' (Chomsky 1966a:13). (I have arbitrarily selected one of several formulations that Chomsky gives for the interrelatedness of the creative aspect of language, its freedom of stimulus control, and appropriateness to arbitrary situations; see also note 26.) It seems to me that the crucial point is the appropriateness to new situations. The possibility of freedom of stimulus control is certainly necessary for language use, but it obviously holds for other types of human behavior as well. Painting, singing, or simply the decision whether I go to bed now or later, are possibly equally free of stimulus control. In this respect, language use is only one, perhaps the most important type of human activity. (And it is not a priori clear whether in fact all animal behavior is stimulus bound in a sufficiently precise sense.) Creativity, on the one hand, can mean that a system with an indefinite number of constructible entities is involved, and then it reduces to the fact that this system shows some type of recursiveness. This purely formal explication of creativity again would apply to many types of behavior that are not bound to language. Many kinds of games, for example, would show this type of creativity. Even certain types of bird songs may turn out to be creative in this sense, viz. bound to finiteness just as language is, only by real time, not by the under-

lying system of rules. Therefore the creativity of language that Chomsky has in mind must be something else, and this, most reasonably, is its appropriateness to any new situation, the possibility 'to express indefinitely many new thoughts, intentions, feelings, and so on'. Creativity, and hence appropriateness, in this sense, however, is precisely equivalent to Hjelmslev's notion of translatability, or possible manifestation of all purports. This can easily be seen from the following consideration. Assume that appropriateness and translatability are not equivalent. Then there must be two languages A and B such that at least one sentence S of A cannot be translated into a sentence (or a sequence of sentences) of B. But now there must be at least one situation such that just S is appropriate to it (in a sense which I do not bother to make precise here). This would mean that B fails not only as to the condition of translatability, but also that of appropriateness. This is contrary to our assumption. Hence appropriateness implies translatability. The inverse implication follows from the assumption that for any possible situation whatsoever there is at least one language containing at least one sentence S appropriate to it. Thus Hjelmslev and Chomsky do not only deal with the same problem, they make also precisely the same claim, viz. that the essential property of human language is its possibility to express everything that can be expressed at all, i.e. that they are in a certain sense complete.[27] It goes without saying that translatability cannot mean that any two languages can express the same things in the same way, i.e. by similar expressions. It might very well be the case that a rather clumsy sequence of sentences in a language B is required to translate a fairly simple sentence of a language A. It is worth noticing, however, that complete translatability implies that the principle of linguistic relativity, i.e. the Whorf-Weisgerber Hypothesis cannot be maintained in its strict sense.

The second problem to be discussed is the way of explication for the property just stated. Chomsky insists on the fact that creativity cannot be accounted for by vague hints of such principles as analogy, grammatical patterns, dispositions, etc., but that an explicit statement of the particular type of structure responsible for the characteristic possibilities of human language must be attempted. A full statement of this type of structure is the universal grammar discussed above. Hjelmslev is looking for an explanation in much the same spirit, if he refers to a structural peculiarity underlying the capability of giving satisfaction in any situation. And he is quite clear in stating the assumption that this peculiarity rests on the particular combinatorial structure of language. He adds, however, a further assumption, viz. that a better knowledge of nonlinguistic semiotics might reveal also insights into the essentials of language. This leads to the non-trivial aspect of the general glossematic conception that I had in mind above. The set of all (possible) languages, delimited by the particular set of linguistic universals and structured moreover by internal correlations such as genetic or typological relatedness, is placed within a hierarchy of semiotic and non-

[27] Katz (personal communication) has observed independently the essential importance of translatability or 'completeness' for which he proposes the term 'effability'. He is not responsible, of course, for the present line of reasoning.

semiotic systems, organized according to certain general principles, but with essentially different types of complexity. These types of complexity must be formally explained, e.g. in terms of number of levels and types of relations between them. Thus while Chomsky (1968:60) is undoubtedly right when he says that it is of little interest to study language on a level of abstraction that comprises e.g. systems of animal communication as well, Hjelmslev would argue that a systematic comparison of language with both less and more complex systems (the latter being e.g. science or poetry) might reveal peculiarities even of language structure. And a systematic study of this type presupposes a certain uniform frame of reference. The difference in attitude is, of course, only one of emphasis, not of principle, if we are careful with respect to the status of such a general framework of comparison. The interesting point at issue, however, is the following. Hjelmslev would agree with Chomsky presumably in that the class of natural languages is specified precisely by the set of linguistic universals, both formal and substantive. Hence we are interested in making this set of universals as specific as possible with respect to the collected data. But we are certainly interested also in the question as to what exactly the essential properties explaining the decisive principle of complete translatability are. Thus whereas e.g. the system of phonetic features is without any doubt an integrated part of the system of linguistic universals, we would certainly not assume that its particular content is decisive for translatability, whereas the principle of its organization might be. The situation may be different with respect to the system of universal semantic components: it could be that not only the principle of its organization, but also its particular content is a necessary condition for translatability. It is premature to go any further here into speculations as to what the essential properties are. I would merely point out that even in this respect the theory of generative grammar is able to formulate more revealing hypotheses than glossematic theory, because of the conception of grammars as systems of rules. In fact, the study of the generative capacity of different systems of rules as exemplified e.g. in Chomsky 1963 is a first step towards a systematic comparison of the type discussed here, at least with respect to one parameter.

The last point I would like to take up is an aspect of justification of the general theory. Remember first of all that the description of particular facts, say of a given language, can be deduced from — or is determined by — the general theory in the following way: the theory provides a scheme of levels, categories, functions, etc. which the description must fit, and an evaluation measure which selects one particular description, if several possibilities are compatible with the same data. In this respect the role of the general theory in glossematics is completely identical to that assumed in the theory of generative grammar, described e.g. in Chomsky (1957:49–56). The selected description has the status of an elaborated hypothesis whose validity is tested by the correctness of the predictions derived from it. Remember furthermore that the general theory is itself an elaborated empirical hypothesis, concerning the general properties of all sets of facts, say all languages, to be accounted for. Its validity is tested by the validity of the particular descriptions derived from it. Hence the evalua-

tion criterion, as discussed above, is an integrated part of the general theory, subject to empirical validation. Now it is a singular feature about glossematics that the general theory is assumed to be evaluated by the same principle of simplicity that we have discussed above with respect to evaluation of particular descriptions. The argument by Uldall (1957:23) goes as follows: 'Now it will always be possible to simplify any algebra at the expense of its applicability, and from any algebra thus reduced a limited number of particular descriptions can be deduced which are individually simpler than the corresponding particular descriptions deducible from the more general algebra. In other words, any one material, e.g. any one language, can be described in a very simple way if the descriptive apparatus, the algebra, is adapted to that purpose alone; if it is desired, on the other hand, to give uniform descriptions of more than one material, e.g. of more than one language, then the descriptive apparatus, and hence any particular description, is likely to be less simple. The reason is obvious: particular descriptions differ as to degree of complexity, and the descriptive apparatus must be equipped to deal with the highest degree of complexity that can be foreseen to come within its scope.' The stipulated generality of the descriptive framework is, of course, a necessary condition imposed on the general theory — given the reservations discussed above. Insofar as it relies on simplicity, however, it presupposes an a priori definition of this notion, which deprives it of all empirical content. This is the deeper reason for the arbitrary character of the simplicity principle that we have noted above.

In generative grammar the notion of simplicity has a much more specific sense. This is gained, however, at the price of another intuitive and a priori notion, viz. that of revealing insight, or relevant generalization. Notice, that the theory of generative grammar is meant to construct the set of linguistic universals and the corresponding evaluation procedure in such a way that they jointly assign a higher value to that description which embodies the more general statements about the same data. In other words, the descriptive framework must be designed in such a way that the more revealing or more general description is also the simpler one, where simplicity is completely dependent on the proposed descriptive framework. But now the notion of simplicity is based on that of relevant generalization. I do not consider this to be a theoretical flaw, although there may be conflicting cases where it is by no means obvious which generalization is the more important. The glossematic theory, like every other explicit linguistic theory which I know, is free of this heuristic problem — but only because it has relegated the involved questions from any further consideration by subscribing to the arbitrary principle of simplicity quoted above. Thus, far from being a theoretical weakness, the connection between linguistic universals, simplicity, and significant generalization is one of the heuristic stimulations for continuing improvements within the theory of generative grammar.

Let me conclude this discussion of problems of the glossematic theory with the remark that I selected only those general topics that are, in a sense, counterparts to corresponding claims of generative grammar. I tried to show that in spite of enormous

differences in particular assumptions, both theories share a certain attitude towards the scope and the status of a linguistic theory. The major flaws of glossematics are that it lacks a precise notion of rule of grammar in general and hence reduces linguistic descriptions to complicated sets of lists of elements and functions, that it lacks in particular the notion of transformational rules, and that it underestimates the empirical motivation for both linguistic universals and evaluation criteria.

V

I have discussed at some length particular issues of glossematic theory, because it provides the most explicit formulation of almost all views shared by the other main trend of European structuralism: The Prague School. Except for the fact that the Prague School has not developed its conceptual framework with the same explicitness and theoretical pretensions as glossematic theory, there is one main difference: whereas in glossematics the levels of form and substance on each plane are taken as strictly separate aspects of structure, such that entities of the levels of form must not be established with respect to the units of substance which manifest them, the Prague School has based its functional units always on phonetic and semantic considerations, respectively. Thus in *Projet* (1931:309) phonology is defined as 'Partie de linguistique traitant des phénomènes phoniques au point de vue de leurs fonctions dans la langue'. Hjelmslev would not admit that the expression form deals with phonetic phenomena. Glossematic theory has been criticized by several authors, e.g. Jakobson and Halle (1956), for this neglect of phonetic substance. What emerges here is, however, an interesting misunderstanding on both sides. First of all, glossematic theory realizes, of course, that the level of form can be approached only by means of its manifestation in a particular substance. The claim it makes is merely that this substance must not enter the functional specification of formal units which are completely abstract. It assumes, furthermore, that a complete description has not only to specify the units of form and their possible combinations, but also their possible manifestations by units of substance. Thus the point at issue is not whether a characterization of units of form without reference to substance is possible, but whether it leads to the appropriate result. If we look at the problem in this way, then the glossematic position shows an essential advantage and serious defect. As far as it is not bound by its principles to the conditions of linearity, biuniqueness, and phonetic similarity relating expression form and expression substance (i.e. roughly phonemic and phonetic representations), it can achieve important generalizations over and above those of the Prague School theory, which is subject to these conditions (see footnote 23 for an example of this type). It is important to remember that the only criterion restricting possible analyses is the principle of simplicity. Since glossematic theory does not provide on the other hand an appropriate system of rules connecting the levels of form and substance, arbitrary solutions for the structure of the level of form are not excluded. The Prague

School, however, while necessarily lacking certain important generalizations, cannot run the risk of arbitrariness. From the point of view of generative grammar it is obvious how both shortcomings can be avoided. The abstract representation, foreseen by the glossematic theory, must be supplemented by a system of rules relating it to the phonetic representation, and both the representation AND the system of rules are to be subject to the evaluation criterion, which must then of course be modified.[28] What has been discussed so far with respect to form and substance of expression, applies — according to the theoretical claims — also to the content plane. And though there has been considerable discussion of these problems by Hjelmslev (1935) and Jakobson (1936), this discussion is rather hard to pursue any further for two reasons: First, because all relevant discussions relate to inflectional categories only, mainly to case categories, which are by no means a typical phenomenon of semantic problems, and secondly, because of the extremely unclear question as to what the distinction between linguistic form and linguistic substance would finally turn out to be on the content side.

There are of course, a lot of other ideas originating from the Prague School, which are extremely interesting from the point of view of generative grammar. I need only mention the concept of opposition, further developed into the notion of distinctive features; the concept of marked and unmarked categories; the concept of archiphoneme and neutralization.[29] It is not necessary to deal with them any further here, they have been elaborated and incorporated step by step into the theory of generative grammar with extensive discussion of all related questions, including their origin.

One of the most characteristic features of almost all European structural linguistics before generative grammar is the relatively small interest in syntactic analysis. The bulk of empirical investigations concentrates on problems of phonology and morphology, the latter being understood mainly as semantic interpretation of inflectional categories. With a few exceptions, such as Bech (1955), only the most superficial aspects of syntactic structure have been noted. (This is true, of course, also of American linguistics of that time.) This characteristic gap is not an accidental fact, but rather a necessary consequence of principal theoretical positions, in particular the lack of an explicit notion of grammatical rule, the concentration on problems of representing structures, which in turn reduces grammatical description to lists of inventories or categories and their possible concatenations, resulting essentially in phrase structure representations, as far as syntax is concerned. The missing link can easily be provided

[28] Postal (1968) has shown that this criterion can be summarized to what he calls the naturalness condition which claims that the abstract representation is related to the phonetic one by general rules of universal phonetics, unless there are empirically motivated language-particular rules which account for peculiar differences between the two representations.

[29] It is worth mentioning that almost all of them have their formally defined counterpart in glossematic theory. Glossemes are for example organized into categories where intensic and extensic elements are opposed to each other. These notions are defined with respect to possible manifestation in the pertaining substance, such that the extensic unit under particular conditions may have the same manifestation as the intensic one, but not vice versa. Thus intensic and extensic elements correspond to marked and unmarked ones, respectively. For details see Hjelmslev 1935.

from the viewpoint of generative grammar, by the existence of structure-dependent operations mapping abstract representations on superficial syntactic representations (see footnote 2), in short transformational rules. Without such a theoretical concept syntactic analysis turns out to be unfeasable, or at least unrevealing.

This very limitation applies also to the only true exception to the above remark, the peerless work of Tesnière (1959), since although he realized the central importance of syntax for an understanding of natural language, he too was preoccupied with problems of representing structures, lacking the notion of grammatical rule generating and transforming structures. The system of representation that Tesnière has developed has since been explicated in terms of dependency systems, e.g. by Hays (1964). These in turn have been proven by Gaifman (1965) to correspond in a specific way to context free phrase structure grammars. As these are known to be inadequate to characterize the syntactic mechanism of natural language, the basic principles of Tesnière's system were doomed to failure. He was aware, to a certain extent, of this shortcoming, and tried to escape it by means of certain additional devices, representing phenomena of conjunction, reference identity (mainly the effect of pronominalization), and what he calls 'translation', viz. the further expansion of a single category such as noun, adverb, adjective, by complex syntactic structures. These are, undoubtedly, insightful hints to fairly complex syntactic problems. But they are formulated in terms of graphic schemes for representations only, with no formal basis to provide their theoretical status. What is interesting, however, is the fairly abstract status of Tesnière's syntactic representations. Whenever the syntactic dependencies and superficial ordering of syntactic constituents conflict, Tesnière decides in favor of the former. Thus, in a sense, his dependency trees are closer to syntactic deep structure then to surface structure in the sense of Chomsky (1965). There is no way, however, to connect them systematically with the set of possible surface structures. In this respect, Tesnière simply presupposes the intuition of the intelligent reader, instead of explaining it.

I should finally mention that branch of linguistic development that was dominant in the period after World War II mainly in West Germany, viz. the 'inhaltsbezogene Grammatik' as expounded in Weisgerber 1953. I cannot go here through the general assumptions and the particular claims made in this conception. They are of only marginal interest to the present paper, all the more so as this trend is not only devoid of any precise formulation of the notions involved, but refuses any attempt to develop one. I would like to mention only two points. The first is that Weisgerber takes up, besides some of Saussure's concepts, in particular the idea that signs are two-sided entities organizing an amorphous substance of thought and sound, in particular Humboldt's ambiguous notion of inner form. In doing this he revived the Humboldt tradition in present day linguistics long before Chomsky incorporated Humboldt into the tradition of Cartesian linguistics. The ideas taken from or ascribed to Humboldt are however extremely different in generative grammar and the inhaltsbezogene Grammatik. Although both emphasize Humboldt's notion of the creative aspect of

language, only generative grammar tries to explicate this vague notion by means of precise theoretical concepts (in particular application of grammatical rules and modification of grammatical rules), while the inhaltsbezogene Grammatik sticks to the original vagueness. And whereas the notion of inner form is explicated in the framework of generative grammar as the abstract, underlying (at least partially universal) structure, the same notion is paraphrased in the inhaltsbezogene Grammatik by such terms as 'Weltbild', 'sprachliche Zwischenwelt', emphasizing the language particular aspect of it and relating it to assumptions corresponding to the Whorf Hypothesis. Thus while generative grammar stresses the rationalist tradition continued by Humboldt, the inhaltsbezogene Grammatik is concerned exclusively with the romantic and idealistic traits in Humboldt's iridescent and outstanding work.

The second point is the important place which the notion of 'Wortfeld', developed originally in Trier (1931), occupies in Weisgerber's conception. What lies behind this notion is essentially Saussure's idea that it is only the linguistic form that organizes the amorphous mass of thoughts. Trier hence assumes that only the mutual delimitation of words can lead to articulate concepts, this articulation originating within coherent fields of words. I cannot analyze here the inconsistencies arising from the assumption that on the one hand it is only the mutual delimitation of words imposing a structure on possible thoughts, while on the other hand it must be a field of thoughts given in advance that constitutes a particular field. The rationale behind this conception, after the elimination of these untenable assumptions, is the fact that the semantic analysis of particular words cannot proceed by considering isolated words, but rather by analyzing appropriate sets of elements exhibiting common and contrasting components in particular interrelations, as I have done e.g. in Bierwisch 1967. Any detailed effort in this direction shows quite clearly that pure delimitation is by no means a sufficient notion. What is required is rather a detailed conception of different types of interrelations between cognate lexical items. Thus the general notion of 'Wortfeld' as well as the particular facts gathered in this connection call for a critical re-analysis.

I have not given, of course, in the present paper a complete account of the typical problems of European linguistics before the arrival of generative grammar, not even of those that have some bearing on it. But I hope that I have been able to characterize to a certain extent the general scene which it entered in 1960 and the particular facets predetermined by it. Its development since then has shown that none of these preconditions has led to special consequences. The reason for this is, to my mind, that there are no essential problems posed in European structural linguistics which are not or cannot be integrated into the framework of generative grammar. The explicit integration of some of them, however, might still be open.

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SEMANTICS

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1. INTRODUCTION

Until quite recently, the centre of gravity of semantic studies lay quite unmistakably in Western Europe. It is here that the new discipline had originated, in the lectures which C. Chr. Reisig gave at Halle, from about 1825, on Latin philology;[1] it is here that it received its name, sixty years later, in an article by Michel Bréal (1883; cf. Read 1948); and all the early classics of modern semantics were written by West European scholars.[2] In the decades which followed, there were some notable contributions to semantics by linguists in America, Eastern Europe, India, Japan, and other areas, but for a long time Western Europe remained in the van in this branch of linguistics. The notoriously negative attitude to meaning which was prevalent in the United States during the Bloomfieldian era was no doubt the main factor responsible for the lopsided development of semantic studies. During the last few years, however, the impact of componential analysis, transformational-generative grammar, psycholinguistics, the Sapir-Whorf hypothesis, and various other influences have completely revolutionized the situation in America, and Soviet and other East European linguists have also become intensely interested in semantic problems.

Since, till a very recent date, most of the work on semantics was done in Western Europe, it would be futile to attempt a comprehensive survey in this chapter: one would virtually have to write the history of an entire branch of linguistics during the last half-century. Two initial limitations are indicated by the nature of the subject itself. Firstly, I shall confine myself to linguistic semantics; other approaches to meaning will be considered only when they have had a direct influence on the work of linguists. No account will therefore be taken of 'philosophical semantics' which is itself a subdivision of a wider science: 'semiotics' or 'semiology', the general theory of signs.[3] The more popular variety of philosophical semantics, the so-called 'general

[1] On Reisig and other precursors of modern semantics, see Kronasser 1952:29ff. and Baldinger 1957:4ff. The Spanish translation of the latter work (1964) brings the German text up to date.

[2] A. Darmesteter, *La vie des mots étudiée dans leurs significations* (1887); M. Bréal, *Essai de sémantique* (1897); A. Meillet, "Comment les mots changent de sens" (1905–06); K. Nyrop, *Grammaire historique de la langue française. IV: Sémantique* (1913), etc.

[3] On philosophical semantics, see my *Principles of semantics* (2nd ed., 1963:7ff.) and, among more recent West European contributions, Cohen (1962); George (1964); De Mauro (1965), etc. 'Semio-

semantics' of A. Korzybski and his followers,[4] will also be excluded. Similarly, the contributions of psychology and other neighbouring disciplines to our understanding of semantic processes will be noted only insofar as they have direct relevance to linguistic problems.

Within linguistics itself, the term SEMANTICS is used both in a broader and in a narrower sense. The former is concerned with all the manifestations of meaning in language, whereas semantics stricto sensu is the study of word-meanings only. Obviously, important semantic problems may arise both below and above the word level: bound morphemes (suffixes, prefixes, infixes, flexions, non-independent roots, etc.) have meaning, and so do higher units: phrases, clauses, sentences, and even larger elements of discourse (cf. Fowler 1965). Semantics in the wider sense will handle the meaning of all these various units and their combinations. Traditionally, however, the term semantics, without any qualifying adjective or phrase, has tended to refer mainly to the study of lexical meaning, and it is mostly in this sense that its practitioners in Western Europe have used and are still using it, even though other levels of semantic analysis have also received attention. In the discussion which follows, the term semantics will therefore denote the study of lexical meaning.

Even in this more restricted sense, a vast and extremely varied literature has arisen around the subject during the last half-century, and in recent years there has been, in Western Europe as elsewhere, a veritable explosion of interest in semantic problems. Rather than aiming at completeness at the cost of superficiality, it might be more useful to concentrate on selected areas of semantic research which have attracted the interest of most West European linguists and where the most significant advances have been, or are being, achieved. The first and most crucial of these areas is obviously the concept of meaning itself, on the elucidation of which progress in more specific fields will ultimately depend. The other areas can best be dealt with under three headings: descriptive, historical, and structural semantics. Strictly speaking, this classification is not homogeneous since structural semantics has both a descriptive and a historical dimension. The two are, however, so closely interdependent that it would destroy the unity of this youngest and most exciting branch of semantic study if one were to treat them separately.

2. THE CONCEPT OF MEANING

As far back as 1923, Ogden and Richards compiled a list of no less than sixteen main definitions of meaning, some of them with two, three, or even four subdivisions (1936:

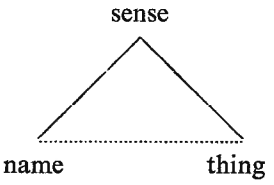
logy', foreshadowed by Saussure (1949:33), has recently become very popular in France, as part of the 'structuralist' movement, in the works of Roland Barthes and others; for a recent survey, see Prieto (1966).

[4] This movement, developed by S. Chase, S.I. Hayakawa, A. Rapoport and others, and centred on the journal *ETC.*, has remained essentially American and has made little direct impact on Western Europe. For a polemical but well-informed reaction from Eastern Germany, see Neubert 1962; cf. my review (1967a).

186ff.). Since then, West European and other scholars have added many more items to the list. It would seem, however, that the situation is not quite as chaotic as it would appear at first sight, since most of the definitions fall into two broad categories: the 'analytical' type, which seeks to resolve meaning into its constituents, and the 'operational' type, which is less interested in what meaning is than in how it works.[5]

2.1 *Analytical Definitions of Meaning*

In West European semantics, the most influential analytical model of meaning is the famous 'basic triangle' of Ogden and Richards, which splits meaning into three components: symbol, thought or reference, and referent — or, to use simpler and more distinctive terms, name, sense, and thing. The name is the physical (phonic or graphic) word; the sense is the information conveyed by the name; the thing is the non-linguistic phenomenon to which the word refers (Ogden and Richards 1936:11):



The dotted line means that there is no short cut, no direct connexion between name and thing: the relation between them is mediated by the sense, i.e. by our awareness of the referent, which includes all the linguistically relevant features of the latter.[6]

A number of West European scholars, whilst accepting the essential points of this analysis, have found it expedient to simplify the model by omitting the 'thing', the referent, which is by definition non-linguistic.[7] This leaves us with only two elements, the name and the sense or, in Saussurean terms, the SIGNIFIANT and the SIGNIFIÉ. The relationship between the two is both reciprocal and reversible: the speaker thinks of the referent and then pronounces the name, whereas for the hearer the process works the other way round: on hearing the name he will think of the referent. It is this reciprocal and reversible relation between name and sense which many semanticists regard as the 'meaning' of the word. The choice of terms is of course immaterial, but

[5] For a more detailed treatment of these problems, see my books, 1962, ch. 3, and 1964a, ch. 2; cf. also Wells 1954. For more recent surveys, see e.g. Hattori 1965; Arcaini 1967; Campbell 1967.

[6] 'It is clear that we must discriminate between *non-distinctive* features of the situation, such as the size, shape, color, and so on of any one particular apple, and the *distinctive*, or *linguistic meaning* (the *semantic* features) which are common to all the situations that call forth the utterance of the linguistic form, such as the features which are common to all the objects of which English-speaking people use the word *apple*' (Bloomfield 1933:141).

[7] Except, of course, in the rare cases when we talk about linguistic phenomena: cf. Bloomfield 1944. On the exclusion of the referent, cf. Werner 1952:255, and my comments in *Language and style*, p. 19.

this 'bipolar' relationship is so fundamental to the understanding of semantic phenomena that it is logical to denote it by the central term of the whole area.

The conception of meaning underlying these and similar definitions has been severely criticized on both sides of the Atlantic. Some linguists have denounced it as an example of psycho-physical parallelism perpetuating the traditional metaphysics of body and soul. In the words of one critic (Haas 1954:71), 'as, in a human person, a soul or mind is supposed to accompany the body and its overt behaviour, so in a linguistic sign, a meaning is supposed to accompany the form in its various occurrences. The linguistic sign is supposed to emerge from a correspondence, a kind of psycho-physical parallelism, between a form and a meaning' (cf. also Firth 1957a:19, 227 and 1957b. For an American critique, see Read 1956). This criticism is based on a misunderstanding. The duality of form and meaning, name and sense, *signifiant* and *signifié*, expression and content, or whatever other terms one chooses to use, has nothing to do with any metaphysical theory: it is the duality inherent in any sign, linguistic or otherwise. It is only by metaphor that this duality is assimilated to the body-soul dichotomy — nor is the image particularly appropriate, as Saussure (1949: 145) had already realized.

The charge of dualism is often coupled with another objection to analytical theories of meaning, although the two criticisms are really concerned with quite different points. As a British linguist, who is not particularly sympathetic to the Ogden-Richards approach, has recently pointed out, 'what is wrong with traditional "conceptual" semantics is not the dualist principle itself, but its extension beyond the limits within which it is empirically applicable, and of course the unnecessary postulation of intermediate concepts' (Lyons 1966:293). In other words, the crux of the matter is what we have called the 'sense': the setting up, between the physical word and the non-linguistic phenomenon to which it refers, of an intangible mental entity which can be grasped only by introspection and defies any rigorously scientific formulation. 'An empirical science', it is argued, 'cannot be content to rely on a procedure of people looking into their minds, each into his own' (Haas 1954:74).[8] This is certainly a serious difficulty in any analytical theory of meaning, even if it defines the 'sense' in purely neutral terms, without committing itself to conceptualism, behaviourism, or any other psychological doctrine. The way out, however, is not to abandon an analysis which seems valid and useful in other respects, just because one of its terms is not easily amenable to precise formulation, but rather to try to define the 'sense' with the maximum of accuracy and rigour attainable in this difficult field. Recent attempts to 'measure' meaning, however inchoate in their present form, may point to one of the ways in which such precision could be achieved.[9]

[8] Cf. also Robins 1952–53 and Reichling 1962.

[9] On the significance, from the point of view of semantic theory, of the method evolved by C.E. Osgood and his collaborators in *The measurement of meaning* (1957), cf. my *Semantics*, pp. 68ff. On other attempts to quantify certain aspects of meaning, see *ibid.*, p. 69, n. 3, and *Language and style*, p. 22, n. 2; cf. recently Lyons 1968:415f.

Analytical models of meaning, replacing the naive conceptualism of earlier days, have been popular in West European semantics for many decades,[10] and it is interesting to note that a symposium held on these matters in 1951, all but one of whose participants were West Europeans, found itself in agreement with the definition of meaning as a relation between *signifiant* and *signifié*.[11] The analytical approach, whatever its theoretical limitations, has also proved useful in practice in that it has provided semanticists with an orderly yet flexible framework into which synchronic, diachronic, and structural data could be fitted smoothly (cf. in particular Stern 1931/1964; Guiraud 1955; Kany 1960b; as well as Ullmann 1962, 1963, 1965). In recent years, however, several West European semanticists have begun to feel the need for a more differentiated set of distinctions. This has led to entirely new ideas about the semantic structure of the word, which will be discussed in the final section of this chapter.

2.2 *Operational Definitions of Meaning*

The operational approach to meaning, developed by P. W. Bridgman and others in the United States, found its most famous expression in Western Europe in L. Wittgenstein's *Philosophical investigations*, published posthumously in 1953. Whereas Bridgman had merely asserted that 'the true meaning of a term is to be found by observing what a man does with it, not by what he says about it' (1927:7), Wittgenstein went even further and — with some slight reservations — equated meaning with use: 'For a *large* class of cases — though not for all — in which we employ the word "meaning" it can be defined thus: the meaning of a word is its use in the language' (1953:20, cf. pp. 53 and 215). This fits in with Wittgenstein's conception of words as tools. 'Think of the tools in a tool-box,' he writes; 'there is a hammer, pliers, a saw, a screw-driver, a rule, a glue-pot, glue, nails and screws. — The functions of words are as diverse as the functions of these objects' (1953:6). And again: 'Language is an instrument. Its concepts are instruments' (1953:151). Like Saussure, he visualizes language as a game of chess: 'The question "What is a word really?" is analogous to "What is a piece in chess?" ... Let us say that the meaning of a piece is its role in the game' (1953:47, 150).

Other philosophers have suggested different analogies to bring out the same idea. A Danish scholar has argued that the meaning of an expression is 'something comparable to the office of an office-holder; he might rightly act, i.e. function, in a certain way by virtue of his office, the expression might rightly be produced by virtue of its meaning' (Christensen 1961:15). More illuminating are the images in which Gilbert Ryle has tried to capture the essence of the operational concept of meaning: 'Word-

[10] On some early examples of relational definitions of meaning (Gombocz, Weisgerber, etc.), cf. my *Principles of semantics*, pp. 67ff. and 160f.

[11] On this conference, which was held in Nice, under the chairmanship of E. Benveniste, and attended by C.E. Bazell, G. Devoto, J.R. Firth, H. Frei, L. Hjelmslev, J. Lotz, A. Sommerfelt and myself, see Devoto 1951.

meanings do not stand to sentence-meanings as atoms to molecules or as letters of the alphabet to the spellings of words, but more nearly as the tennis-racket stands to the strokes which are or may be made with it ... Learning the meaning of an expression is more like learning a piece of drill than like coming across a previously unencountered object ... the meaning of an expression is not an entity denoted by it, but a style of operation performed with it, not a nominee but a role' (1957:249, 256f., 262).

There is no need to emphasize the attractiveness of Wittgenstein's concept of meaning, which replaces abstract mental entities by directly observable modes and processes of linguistic behaviour. Although he did not evolve a coherent theory of meaning, the passages already quoted, where words are assimilated to tools and to chessmen, as well as various other insights, show a remarkable affinity between his view of language and some of the basic principles of contemporary linguistic theory (cf. Ullmann 1964a: 25f.). At the same time, his concept of meaning raises various difficulties which philosophers and linguists were not slow to point out. Firstly, it has been convincingly argued that use is a wider concept than meaning, that it includes various factors which have nothing to do with the latter: the fact that Lat. *ūtor* is a deponent verb and that it governs the ablative is quite unrelated to its meaning and yet an integral part of its use (see Ziff 1960:158; Fodor 1963; Rosiello 1965:84f.). Secondly, 'misuses of words occur. One cannot find out what a word means by examining its actual usage unless one can recognize misuses and deviant uses' (Ziff 1960:70). In other words, the theory will inevitably raise the question of standards of correctness in usage and may thus lead to a normative attitude toward language. As a British critic of Wittgenstein has pointed out, 'words are not artifacts, to be operated in accordance with craft-rules or manufacturers' instructions, and speech is not exactly a technique, but rather something that can itself be either technical or non-technical. By treating speech as a technique the tool-use analogy encourages a normative attitude to language, when philologists themselves have long since abandoned any such attitude in order to do justice to all social levels of speech' (Cohen 1962:53 — cf. also 123ff.).[12]

Wittgenstein's definition of meaning had immediate repercussions in linguistics (cf. Wells 1954 and Haas 1954:81, n. 1), and some linguists found that their own ideas were very much on the same lines as his. Among these, the late J.R. Firth, the first Professor of General Linguistics in Britain, has exercised a truly seminal influence.[13] Firth never tired of emphasizing the crucial importance of meaning in language, and evolved an all-embracing semantic theory to this end. In an often-quoted passage he wrote: 'I propose to split up meaning or function into a series of component functions. Each function will be defined as the use of some language form or element in relation

[12] See also Ryle and Findlay 1961 and Meredith 1962. The analogy between words and tools was fully developed by G.K. Zipf: cf. his 1945 article, and his book, *Human behavior and the principle of least effort* (1949).

[13] Firth's theory of meaning has to be pieced together from a number of articles, most of them reprinted in his *Papers in linguistics*; see in particular: "The technique of semantics", 1935; "The semantics of linguistic science", 1948; "Modes of meaning", 1951. A searching critique of Firth's ideas on the subject will be found in Lyons 1966.

to some context. Meaning, that is to say, is to be regarded as a complex of contextual relations, and phonetics, grammar, lexicography and semantics each handles its own components of the complex in its appropriate context' (1957a:19). He visualized these components of meaning on the analogy of the spectrum of colours: "The suggested procedure for dealing with meaning is its dispersion into modes, rather like the dispersion of light of mixed wave-lengths into a spectrum' (cf. Lyons 1966:290). He advocated a 'serial contextualization of our facts, context within context, each one being a function, an organ of the bigger context and all contexts finding a place in what may be called the context of culture' (Firth 1957a:32).[14] Among these various types of context, Firth attached particular importance to the 'context of situation', a notion elaborated by the anthropologist Bronislaw Malinowski in his work on the language of the Trobriand Islanders in the South Pacific.[15] In such a context, the whole utterance as well as its components are linked up with various features of the situation: the verbal and non-verbal action of the participants; differences of personal status, social relations, and similar factors; the relevant objects; the effect of the verbal action (see Robins 1963:19, 1964:28).

As regards lexical meaning proper, Firth recommended that words should be treated as 'substitution-counters' (1957a:20) and studied, not in isolation, but in the light of the 'collocations', the habitual associations into which they enter. 'One of the meanings of *night*,' he wrote, 'is its collocability with *dark*, and of *dark*, of course, collocation with *night*' (cf. Robins 1964:68). In the words of another exponent of the same approach, 'substitutions for *cat*, in more comprehensive units such as *The — caught the mouse, I bought fish for my* —, etc., display its meaning; its privilege of occurring in those contexts, with a certain distribution of frequencies among the occurrences, *is* the linguistic meaning of *cat*' (Haas[16] 1954:80).

The concept of collocation has become an important tool of analysis in Firthian and Neo-Firthian linguistics; to quote an authoritative publication of the latter school, 'the formal criterion of collocation is taken as crucial because it is more objective, accurate and susceptible to observation than the contextual criterion of referential or conceptual similarity' (Halliday, McIntosh and Strevens 1964:34). During the last few years, some of the practical problems involved in the study of collocations have been explored, and a new methodology and terminology has begun to take shape: thus, the item whose collocations are studied is called a 'node'; the number of items on each side of the node, which are considered relevant to the latter,

[14] On the role of context, the most important monograph comes from outside the area covered in this chapter (T. Slama-Cazacu, *Langage et contexte*, The Hague, 1961). Cf. recently Nickel 1965 and Ellis 1966.

[15] Cf. his suppl. to Ogden and Richards's *Meaning of meaning*: "The problem of meaning in primitive languages", section III.

[16] See also by the same author, "The theory of translation" (1962), and his paper, "Semantic valence", at the Ninth International Congress of Linguists. As will be seen from this quotation, there are obvious similarities between this approach and the distributional theory of meaning associated with Harris and Hoenigswald; cf. also Apresjan 1966. For criticisms of the distributional theory, see Haas 1954:74ff.; Lyons 1966:295; Robins 1964:66f.; Todorov 1966; Lepschy 1966:153f.

is termed the 'span' of the collocation, and the items themselves (say, three on each side of the node) are labelled 'collocates'; the 'cluster' formed by the collocates of a node may enable us to measure the way in which the item in question is predicted by the occurrence of others (see Sinclair 1966:415ff.).

The Firthian approach to meaning, which is sometimes described as 'contextual' or 'functional', has had a profound and lasting effect on British linguistics; on the Continent and elsewhere, however, it has had comparatively little influence. There can be no doubt that, by strongly emphasizing the paramount importance of meaning at a time when semantics was under a cloud, Firth rendered a valuable service to linguistic studies. Some of the key-concepts of his theory — serial contextualization, context of situation, collocation, and others — have already proved their usefulness, even though some of their implications remain to be explored. On the other hand, his conception of meaning was highly idiosyncratic: he applied the term to phenomena which seem to have little to do with meaning, whilst excluding others which most people would regard as vital aspects of it. Few linguists, for example, would agree with his statement: 'The general feature of voice quality is part of the phonetic mode of meaning of an English boy, a Frenchman, or a lady from New York. Surely it is part of the meaning of an American to sound like one.'[17] The limitations inherent in the Firthian view of meaning are even more serious. A recent critic has gone so far as to claim that, of the four basic notions of semantics: 'reference', 'significance', 'meaningfulness', and logical relations between words, 'significance' is the only one which Firth's theory can make any claims to have captured, and even that only partially.[18] In a more general way, Firth's approach suffers from the same fundamental weakness as other operational theories of semantics. The use of a word, its distribution, the collocations into which it enters, are not identical with its meaning: they are mere consequences and manifestations of the meaning, even if, for methodological reasons, one may feel that it is through these consequences and manifestations that meaning can be most profitably explored.

It would seem, then, that there is no fundamental incompatibility between analytical and operational theories of meaning. Lexicographers and others concerned with semantic problems will in the first instance study the ways in which a word is actually used, and collect a representative sample of contexts. When further collections of data fail to reveal anything new about the uses of the term,[19] they will extract from their material the 'highest common factors' and record them as the meaning, or more probably the meanings, of the word. If the first phase of the enquiry has been conducted on a sound empirical and operational basis, there is no particular reason to avoid the second phase — nor would this be feasible in lexicographical practice. Ber-

[17] Quoted by Lyons 1966:289.

[18] *Ibid.*, pp. 299f. This, however, is disputed by Robins 1967:237, n. 51.

[19] Cf. Martin Joos's account of his work on the collocations of the word *code*: 'The research was essentially complete when about 200 of these clippings had been studied; I have now collected over 500 clippings, but have found nothing new beyond the first 200' (1958:59).

trand Russell has summed up the situation in an admirable image: 'A word has a meaning, more or less vague; but the meaning is only to be discovered by observing its use; the use comes first, and the meaning is distilled out of it.'[20]

3. DESCRIPTIVE SEMANTICS

When semantics emerged as an independent branch of linguistic study, linguistics itself was a purely historical discipline. It was therefore inevitable that semantics should also adopt an almost exclusively historical orientation. This is clear from some of the pronouncements of its pioneers: Reisig suggested that the new science he advocated, 'semasiology', should seek to establish 'the principles governing the development of meaning', and Bréal cast the net even wider when he wrote, in the article already referred to (1883), that semantics would have to investigate 'the laws governing changes in meaning, the choice of new expressions, the birth and death of idioms'. In spite of an early attempt to develop a theory of descriptive semantics (Marty 1950), the historical point of view remained predominant in this field much longer than in other branches of linguistics. For many decades, semanticists were mainly concerned with the analysis and classification of changes of meaning and with the general laws governing their movement, and it was not till the early 1930s that the 'Copernican revolution' initiated by Saussure began to make itself felt in semantic studies. One of the main principles of Saussure's doctrine was the separation of synchronic and diachronic approaches to language, coupled with the claim that of the two, the synchronic viewpoint has absolute primacy 'because for the mass of speakers it is the true and only reality' (1949:128). Other influences, such as the spectacular achievements of linguistic geography, also contributed to the rise of descriptive semantics. Some of the most significant results obtained in this area were connected with structural features; these will be discussed in the final section of this chapter. Here we are concerned with the semantic relations, simple as well as complex, in which individual words are involved.[21]

3.1 *Simple Semantic Relations*

In ideally simple situations, there will be only one *signifiant* and one *signifié*. In

[20] In *Logic and knowledge*, quoted by A. Schaff, *Introduction to semantics* 1962:255. For other operational theories of meaning in Western Europe, see e.g. Leisi 1961 and Sørensen 1967. Outside our area, the operational approach has been championed by L. Antal in a number of articles and reviews as well as in two polemical treatises, *Questions of meaning* (1963), and *Content, meaning, and understanding* (1964); cf. Simone 1966.

[21] There are of course no sharp boundaries between structural and non-structural problems in descriptive semantics; synonymy e.g. will be discussed in this section, under 'complex semantic relations', whereas in J. Lyons's *Introduction to theoretical linguistics* it is dealt with in the chapter on "Semantic structure", together with other logical relations which arise between words (1968:446ff.).

ordinary language, such situations may be the exception rather than the rule; nevertheless they provide a convenient starting-point for the study of some fundamental semantic properties. Of these, two in particular have engaged the attention of West European semanticists: the motivation of words and the overtones which may colour their meaning.

3.1.1 *Motivation*

The difference between motivated and conventional, transparent and opaque words is one of the perennial problems of linguistics and of the philosophy of language. The Greeks, it will be remembered, were already divided into two camps on this issue: the 'naturalists' who believed in a natural (*phýsei*) connexion between name and sense, and the 'conventionalists' who argued that the relation was arbitrary, based on pure convention (*thései* or *nómō*).[22] A recent article, Coseriu 1967b, has collected an impressive list of pronouncements by philosophers, and also by some nineteenth-century linguists, on the subject (cf. also Rosiello 1967:56f.); one of these, W.D. Whitney, declared as far back as 1868: 'Inner and essential connexion between idea and word ... there is none, in any language upon earth.'[23] Saussure explicitly refers to Whitney as his predecessor in this field (1949:110), and there may also have been other influences (Coseriu 1967b:110ff.); but it was undoubtedly Saussure more than anyone else who focused attention on the problem, by setting up 'l'arbitraire du signe' as one of the two essential features of linguistic signs — the other being 'le caractère linéaire du signifiant' (1949:100ff.). The debate to which this contention gave rise received fresh impetus from a famous article by E. Benveniste, published in 1939 in the first number of *Acta Linguistica*.[24] In the course of the discussion which ensued, the whole issue was clarified and put into perspective, and some important conclusions emerged which can be summarized under four headings:

a) *Three types of motivation.* — It is now clear that the original dichotomy of motivated versus conventional — or transparent versus opaque — is oversimplified, since words may be motivated in three very different ways: phonetically (onomatopoeic terms), morphologically (compounds and derivatives), and semantically (metaphors, metonymies and allied transfers). In some cases, the same word may have more than one kind of motivation: G. *Fingerhut*, the equivalent of the opaque E. *thimble*[25] and Fr. *dé*, is a metaphorical compound ('finger' + 'hat'), and is thus both morphologically and semantically motivated. It is also clear that the three types of motivation are not on the same footing; only phonetic motivation is absolute whereas

[22] On this question see recently Robins 1967:17ff. Cf. also by the same author, *Ancient and mediaeval grammatical theory in Europe, with particular reference to modern linguistic doctrine* (1951:7ff.).

[23] *Language and the study of language*, quoted by Jespersen 1934:397, n. 1.

[24] For a useful survey of the whole debate, see Engler 1962. Cf. also the bibliographical references in my *Principles of semantics*, p. 83, n. 2, and *Semantics*, p. 81, n. 1, and more recently Lepschy 1962 and Gougenheim 1967. Cf. also Lucidi 1950.

[25] The fact that *thimble* was originally a derivative of *thumb* has no relevance to the motivation of the word in present-day English.

the other two are relative. A compound or derivative may be perfectly transparent, but its constituent morphemes will be opaque unless they happen to be onomatopoeic; similarly, a metaphor may be motivated, but the word on which it is based may be arbitrary when used in its literal sense. For example, *Fingerhut* is motivated, but *Finger* and *Hut* are not; *jewel* is a transparent metaphor in the phrase: *She is a jewel of a servant*, but in its ordinary sense it is a completely opaque word.[26]

b) *Changes in motivation.* — Motivation is a purely synchronic phenomenon which is independent of the history and etymology of the words concerned.[27] A motivated term may lose its transparency for various reasons: phonetic change, semantic divergence, obsolescence of one or more constituents or of the original meaning, etc. Conversely, an opaque word may, through phonetic change or 'popular etymology', acquire a motivation quite unconnected with its history.[28] There is also a third possibility: the motivation of a word may survive, but in a modified form. Lat. *murmur* e.g. was phonetically motivated, and so are E. *murmur* and Fr. *murmure*, but changes in the pronunciation of the [u] and [r] have resulted in subtle alterations in the onomatopoeic effect.

Among changes in motivation, the various forms of 'popular etymology' have attracted a great deal of attention, especially since Gilliéron and other linguistic geographers showed that it was a far more common process than their predecessors had believed.[29] It has even been suggested that, side by side with traditional etymology which is essentially diachronic, there is need for a synchronic or 'static' etymology which would seek 'to determine the semantic value of words within a language and at a given moment strictly limited in time' (Vendryes 1953:7). Popular etymology would then be no more than a special aspect of static etymology: it would cover those cases where historical data are at variance with the purely synchronic motivation of words. Thus Fr. *choucroute* comes from the Alsatian form of G. *Sauerkraut*, but popular etymology has brought it into relation with the French words *chou* and *croûte*, and the term has been reshaped accordingly. As will be seen later, these processes have important implications for structural semantics; meanwhile it has been pointed out that Sanskrit grammarians had already distinguished between *yoga*, the original sense of a word, and *rūdhi*, the meaning in which it is actually used, and believed that whenever there was a discrepancy between the two, the *rūdhi* ought to carry more weight (Vendryes 1953:5ff.; cf. also Orr 1954).

[26] Cf. Saussure 1949:180ff., where he distinguishes between 'arbitraire absolu' and 'arbitraire relatif'. Cf. also Bally 1950:127ff., and, from outside our area, Zawadowski 1958.

[27] Cf. on this question my *Language and style*, ch. 4 ("Descriptive and historical methods in semantics"), pp. 52f.

[28] On changes in motivation, see my *Semantics*, pp. 93ff. On the loss of phonetic motivation, cf. Marouzeau 1935.

[29] For bibliographical references, see my *Principles of semantics*, p. 91, n. 2, and *Semantics*, p. 101, n. 2. It is interesting to note that in the first edition of Saussure's *Cours*, popular etymology was described as a 'pathological phenomenon'. This expression was omitted from subsequent editions, but it is clear that Saussure regarded popular etymology as an abnormal process which 'arises only under special conditions' (1949:241). Cf. Iordan and Orr 1937:173, n. 1; see also the German edition of Iordan's book, 1962:202ff.

It also happens that a word which had lost its morphological or semantic motivation is 'remotivated': the original link is restored either by explicit comment or implicitly, by placing the term in an appropriate context. Such 'revitalization' is often no more than a stylistic device, as when Valéry speaks of a 'scrupulous brook' (*ruisseau scrupuleux*), thus reviving the metaphorical connexion between Lat. *scrupulus* 'small sharp or pointed stone' and our modern *scruple*, Fr. *scrupule*. Revitalization is, however, of more than stylistic importance when a philosopher like Heidegger draws far-reaching conclusions from it, arguing e.g. that G. *Entschlossenheit* 'resoluteness' really means 'openness, opening up' since it is derived from *schliessen* 'to close', preceded by the privative particle *ent-*.[30]

c) *The subjectivity of motivation.* — Although many cases of motivation are perfectly obvious, others are a matter of opinion and may involve a strong subjective element. This is true of all three types of motivation but particularly important when dealing with onomatopoeia, whether the sounds are supposed to imitate actual noises ('primary onomatopoeia') or to evoke movements, light and shade, moral qualities etc. ('secondary onomatopoeia'). As early as 1901, Maurice Grammont had declared: 'A term is onomatopoeic only if it is felt as such'(1901:125); in other words, phonetic motivation is often a matter of *Sprachgefühl*, a notoriously subjective and unreliable criterion which has led to all kinds of fanciful theories about the colour of vowels and other 'phonaesthetic' effects. A very thorough enquiry by a young Belgian linguist has shown the part played by auto-suggestion in many treatments of these problems, including some of Grammont's own interpretations.[31] To get round these difficulties, some psychological tests have been devised; they have revealed e.g. that when ten French schoolboys completely innocent of English were asked which of the two words *gloom* and *gleam* referred to light, all ten gave the correct answer (Chastaing 1962:5, see also Chastaing 1964; Wissemann 1954).

d) *Motivation, typology, and linguistic universals.* — The relative frequency of transparent and opaque words and the importance of the various types of motivation may vary characteristically from one language to another, and even from one period to another in the history of the same idiom. This was already recognized by Saussure who outlined a rudimentary typology by distinguishing between 'lexicological languages' like Chinese, English, and French, which make comparatively little use of morphological motivation, and 'grammatical languages' like Indo-European, Sanskrit, Latin, or German, which rely extensively on this type of word-formation (1949:183f.). These ideas were followed up by a number of West European scholars[32] who have identified some of the factors governing the scope of morphological motivation in a

[30] See Wandruszka 1958. On a similar technique in Claudel, cf. Guyard 1959. See also Väänänen 1960, and my *Language and style*, pp. 45ff.

[31] Delbouille 1961. For Grammont's theories, see especially his *Traité de phonétique* (1946). For sibliographical references, see my *Semantics*, pp. 84f.

[32] See especially Bally 1950:341ff.; von Wartburg 1958:263f., 1963:203ff.; Leisi 1960, ch. 12. On bemantic typology, cf. my 1953 article; cf. also Leroy 1960:203; Robins 1964:338f.; from outside our area, Hymes 1961:27 and Weinreich 1966a:184f.

given language. Its relative paucity in Modern French, as opposed e.g. to German, is due to three main reasons: rapid and radical sound change which has often obliterated the structure of a compound or derivative (Vulgar Latin *impedicare* is obviously based on *pes, pedis* whereas Mod.Fr. *empêcher* is totally unconnected with *pied*); preference for a simple term where German uses a compound (*dé* versus *Fingerhut*); preference for a learned Graeco-Latin word where German or even English have a native formation (*semaine – hebdomadaire* versus *week – weekly*). The morphological productivity of German, which Fichte had already emphasized (Wandruszka 1958:866f.), has thus been fully confirmed by modern semantics. In a similar way it has also been demonstrated that Old English and Old French had made far wider use of morphological motivation than do their modern descendants. At present, these conclusions are largely impressionistic, based on lists of examples rather than on statistical data;[33] nevertheless, the general tendencies stand out quite clearly. They also have important socio-cultural and pedagogical implications: in English and French, extensive use of 'hard words' derived from Greek and Latin erects a kind of 'language bar' between those with and without a classical education,[34] and it may also affect the acquisition of these languages by foreigners.

While some aspects of motivation will thus vary from one language or period to another and may provide criteria for typological studies, other aspects, such as certain onomatopoeic patterns, are fairly constant and seem to reflect, with notable exceptions, some broad general tendencies. This has been known for a long time, and comparatists have been careful not to use onomatopoeic correspondences, e.g. similar words for 'cuckoo' in different languages, as evidence of historical kinship, but to regard them as cases of 'elementary affinity'.[35] Current discussions on linguistic universals have revived interest in these problems; particular attention has been paid to the 'symbolic values' of the vowel [i] (Jespersen 1933a; Chastaing 1958), but other examples of sound symbolism have also been investigated.

3.1.2 *Overtones of Meaning*

The various overtones which word-meanings can acquire are part of a wider phenomenon which has sometimes been stated in the form of a dichotomy. Some influential scholars have argued that there are two distinct 'uses' or 'functions' of language. Ogden and Richards e.g. distinguish between a 'symbolic' and an 'emotive' use of words: 'The symbolic use of words is *statement*; the recording, the support, the organization and the communication of references. The emotive use of words is a more simple matter, it is the use of words to express or excite feelings and attitudes' (1936:

[33] On the need for statistics, cf. U. Weinreich's (1955) comments on my *Précis de sémantique française*, and my reply in *Semantics*, p. 106, n. 1. Cf. also Mounin 1960:50.

[34] On this question see especially Grove 1949. Cf. also Martinet 1962:88f., and my *Semantics*, pp. 112ff.

[35] A term introduced by Hugo Schuchardt into linguistics; cf. Iordan and Orr 1937:56. Some examples of general tendencies in onomatopoeic patterns will be found in my *Language and style*, ch. 5 ("Semantic universals"), pp. 68ff.

149). In his *Principles of literary criticism*, which came out in 1924, a year after *The meaning of meaning*, I.A. Richards put the distinction in slightly different terms: 'A statement may be used for the sake of the *reference*, true or false, which it causes. This is the *scientific* use of language. But it may also be used for the sake of the effects in emotion and attitude produced by the reference it occasions. This is the *emotive* use of language.'[36] Since then, the theory of the Great Divide, as it has been called, has reappeared in a number of different garbs;[37] on the other hand, many scholars find the dichotomy oversimplified and object to the vagueness and ambiguity of the term EMOTIVE, expecially when it is applied to meaning. In the words of a recent critic, '"emotive", or "affective", is being used as a catch-all term to refer to a number of quite distinct factors ... No useful purpose is served by employing the undoubtedly relevant category of "emotive" (or "affective") connotations for anything that does not come within the scope of "cognitive" meaning' (Lyons 1968:449). A number of more complex schemes have therefore been devised, distinguishing, not between two but between three, four or even more aspects of meaning — in one case as many as nine (Frankena 1958). In some of these schemes, 'emotive' connotations are combined with contextual shifts in application. As early as 1901, one of the pioneers of modern semantics, K.O. Erdmann, had recognized three basic aspects of meaning: 'essential or central meaning', 'applied or contextual meaning', and 'feeling-tone'.[38] A more recent writer adds a sociological dimension to the scheme and thus arrives at a four-point system in which semantic and stylistic criteria are combined: there are two semantic elements proper: 'basic meaning' and 'contextual meaning', and two types of stylistic connotations: 'expressive value' and 'socio-contextual value' (Guiraud 1955:30). On a very different plane, I.A. Richards put forward, in *Practical criticism* and elsewhere, a finer scheme of distinctions than his original one: that between sense, tone, feeling, and intention, which has had a considerable influence on British criticism.

Apart from these theoretical considerations, West European semanticists have also concerned themselves with more empirical problems in this field: the sources of emotive and other connotations;[39] special devices available for heightening the emotional effect of words;[40] various factors which may weaken or cancel out their overtones and associations (Lewis 1960; Riffaterre 1953), etc. Some of the most significant results were connected with the role of such connotations in synonymy and in semantic change, and will be discussed in the appropriate sections. A great deal of attention has lately been paid to what Bally called the 'evocative' value of words: their ability to evoke the particular 'register' to which they normally belong. According to a recent

[36] 6th impression, London, 1938, p. 267.

[37] For references see my *Semantics*, p. 128, n. 2. Cf. in particular Paulhan 1927; Gamillscheg 1937; Sieberer 1947, and in America, Black, Stevenson and Richards 1948.

[38] *Die Bedeutung des Wortes* (4th ed., 1925). The English terms are those suggested by J.R. Firth (1935).

[39] For details, see my *Semantics*, pp. 129ff.

[40] Such as the so-called 'emotive accent' in French (cf. Marouzeau, 1934 and 1948), or emotive metaphors (cf. Adank 1939).

definition, a register is 'a variety of language distinguished according to use', and registers may be classified according to three criteria: (1) 'field of discourse' (situation and subject-matter: technical registers, politics, family relations, etc.); (2) 'mode of discourse' (spoken and written language); (3) 'style of discourse' (relations among the participants: colloquial, polite, etc.).[41] These registers concern the whole range of linguistic phenomena, phonology and grammar as well as vocabulary; on the lexical plane, they give rise to a wide spectrum of nuances, connotations and associations which enrich and differentiate the meanings of words. Many of these problems lie astride the border-line between semantics and stylistics;[42] they suggest, as do several other areas of semantic study (onomatopoeia, synonymy, ambiguity, metaphor and other figures, etc.), that there is a considerable overlap between the two disciplines.[43]

3.2 *Complex Semantic Relations*

The simple semantic relations discussed in the preceding section, in which only one name and one sense were involved, may be complicated in two ways: several names may have the same sense, and conversely, several senses may be connected with the same name:

Various attempts have been made to devise a terminology which would bring out the parallelism between the two phenomena. Bally (1950:172) had suggested the correlative terms *plurivocité – plurivalence.* A recent book on English semantics by an Austrian linguist uses two transparent German formations: *Mehrfachbezeichnung – Mehrdeutigkeit* (Koziol 1967:22ff.). A more differentiated scheme distinguishes between four possibilities: 'homosemy' (identical senses), 'parasemy' (similar senses), 'homophony' (identical names), and 'paraphony' (similar names) (Koch 1963:88f.). These suggestions have one disadvantage: they disguise the fact that one of the two cardinal types already has a commonly accepted name: synonymy. I shall therefore distinguish between synonymy and 'polyvalency'; the latter will then be further subdivided into polysemy (one word with several senses) and homonymy (several words identical in form).

3.2.1 *Synonymy*

The question whether there are any absolute synonyms, in the strict sense of the

[41] Halliday, McIntosh and Strevens 1964:87ff. A somewhat different scheme has been put forward by Spencer and Gregory 1964:86ff.

[42] On connexions between the two disciplines, see Chatman 1967, and my article "Sémantique et stylistique" (1964b). Cf. also Buyssens, 1965, section 2.

[43] On another aspect of simple semantic relations which has been extensively investigated by West European semanticists, namely, vagueness of meaning, cf. my *Semantics*, pp. 116ff.

term, has exercised the minds of various semanticists, in Western Europe and elsewhere.[44] Once again, a number of different conceptual schemes and terminologies have been put forward. To mention only two recent suggestions, one scholar set up 'polyonymy' as a generic category with two subdivisions: synonymy (completely interchangeable words) and 'homoeonymy' (words which are interchangeable within limits) (Koziol 1967:55). Another linguist has a finer mesh of distinctions: in his view, we ought to differentiate between 'complete' synonymy (equivalence of both cognitive and emotive sense) and 'total' synonymy (interchangeability in all contexts). Combinations of the two types and their opposites yield a fourfold scheme: '(1) complete and total synonymy; (2) complete, but not total; (3) incomplete, but total; (4) incomplete, and not total' (Lyons 1968:448).

Semanticists have also given much thought to the various factors — referential, emotive, stylistic, geographical, etc. — which differentiate synonyms from each other. Thirty years ago, W. E. Collinson (1939) enumerated nine types of synonymic distinction: (1) one term is more general than another; (2) more intense; (3) more emotive; (4) more professional; (5) more literary; (6) more colloquial; (7) more local or dialectal; (8) one of the synonyms belongs to child-talk; (9) one of the synonyms may imply moral approbation or censure where another is neutral.[45] It is interesting to note that in a scheme which has just been published, no less than twenty-five different criteria are enumerated, coupled with the comment that there will no doubt be further additions to the list (Baldinger 1968a).

Much work has also been done on another aspect of synonymy: on certain characteristic patterns formed by the synonymic resources of a particular idiom. Students of English and French have investigated the so-called 'double scale' of synonyms in these languages: the famous contrast of 'Saxon' and 'Latin' words in English, and of native versus learned terms in French.[46] In English, the position is further complicated by the existence of a subsidiary pattern, a 'triple scale', where native terms are faced with both a French and a Greek or Latin synonym: *end – finish – conclude, time – age – epoch* (cf. Baugh 1959:225f. and Mossé 1947:206). Another important pattern is that formed by concentrations of synonyms around subjects in which a particular speech-community is intensely interested. Such subjects will, as one semanticist (Sperber 1930:ch. 8) put it, 'attract' synonyms, many of them metaphorical, from various directions: in *Beowulf* there are e.g. thirty-seven words for 'hero' or 'prince', whereas the twelfth-century French epic poet Benoît de Sainte-Maure has thirty-six different terms for 'battle' and 'fight'.[47] Similar centres of attraction have been iden-

[44] For a useful survey see Söll 1966. Cf. also, in addition to Koziol 1967, Lyons 1968, Baldinger 1968a, Collinson 1939 and works referred to in the next note, Koch 1963; Schick 1960:188ff., and, outside our geographical area, Ducháček 1964, and his recent book, *Précis de sémantique française*, 1967: 55ff.

[45] On distinctions between synonyms, see also Dauzat 1946; Foulet 1949, and other works quoted in my *Semantics*, pp. 141 and 144.

[46] See e.g. Jespersen 1930, chs. 5–6, and my *Précis de sémantique française*, pp. 191f. For a Swedish example see Regnéll 1958:77.

[47] On *Beowulf*, see Jespersen 1930:48; on Benoît, see von Wartburg 1963:207f.

tified in dialects (von Wartburg 1963:161f.) and in slang where such topics as cheating, stealing, drunkenness, and especially death are surrounded by a rich variety of euphemistic or jocular synonyms and periphrases (cf. Jespersen 1925:166f. and Ullmann 1965:190). Slang also provides examples of a third type of synonymic pattern. It has been noticed that when a slang term acquires a transferred sense, its synonym or synonyms may tend to develop in the same direction: when Fr. *chiquer* 'beat' came to be used in the meaning of 'steal', other verbs for 'beat' — *torcher*, *taper*, *estamper*, *toquer* — underwent the same development. This process, which is basically a case of analogical extension, has been termed 'synonymic radiation'.[48] On a larger scale, it has been found that, under certain conditions, 'English adverbs which had acquired the sense "rapidly" before 1300, always develop the sense "immediately"', and this group of changes has been described as a 'semantic law' comparable in every respect to a phonetic law (Stern 1931/1964:190).[49]

3.2.2 *Polyvalency*

The crucial question which arises in connexion with polyvalency is that of the boundary between its two varieties, polysemy and homonymy.[50] In many cases, there will be no difficulty; in others, however, there is a great deal of hesitation and inconsistency in deciding whether one has to do with widely different senses of the same word, or with two or more words identical in form. The question is of more than theoretical importance: it constantly arises in lexicography and also has obvious implications for word-counts, collocational studies, and machine translation.[51] Etymological considerations are of course irrelevant from the synchronic point of view: the fact that Fr. *voler* 'steal' ultimately comes from the same source as *voler* 'fly' is of no interest to a descriptive dictionary of contemporary French, which will record the two *voler*'s as two separate lexical items (Spence 1965). West European and other semanticists have put forward various criteria of word-unity. Bréal (1897:146) had already drawn attention to the importance of rhyme as a sign of homonymy. It has also been argued that two forms with different senses must be regarded as two words if they belong to two distinct derivational series: Fr. *poli*, meaning 'polished' in the physical sense, is connected with *polir* 'polish', *dépolir* 'take the polish off', *polissage*

[48] See in particular Migliorini 1948, reprinted in his *Saggi linguistici* (1957), and Esnault 1949:123ff. Cf. also Kroesch 1926.

[49] See also Stern 1921. Cf., however, the reservations of Oksaar 1958:499ff. See also my *Principles of semantics*, pp. 253ff.

[50] In his recent *Grundzüge der englischen Semantik* (1967:52ff.), H. Koziol has suggested that there is a third type of polyvalency, 'isonymy', where the same word is used to denote two or more new objects or ideas without there being any connexion between them: the term *airway* e.g. was coined in 1859 to describe 'a passage for air, especially one for ventilation in a mine', whereas in 1908 it came into use as the name of a 'route of a service of aeroplanes'. This, however, is a diachronic concept which has nothing to do with the purely synchronic distinction between polysemy and homonymy. Cf. my review of Koziol's book in *ES* 48 (Dec. 1967).

[51] On the latter see J. Dubois's report in *Actes du Premier Colloque International de Linguistique Appliquée* (1966).

'polishing', etc., whereas *poli* 'polite' forms part of the group *poiment* 'politely', *impoli* 'impolite', *politesse* 'politeness' (Godel 1948). Among other suggestions, there is the possibility of using collocations as criteria of polysemy or homonymy: thus, the nouns *marriage, daughter, engagement* will often occur together as collocates of *hand* in one sense, whereas words like *whist, rummy, ace, flush* will tend to appear side by side in collocations of *hand* in another sense, which would suggest that we have to do with two separate lexical items (Sinclair 1966:425). Criteria of this kind are certainly more objective than the intuition of speakers, though the suggestion that 'social science has workable techniques for studying subjective opinions, which could be applied to homonymy problems (if it is granted that they are a matter of speakers' opinions) as well as to political issues' (Weinreich 1955:541f.), also deserves serious consideration.[52]

West European research on polysemy has mainly been concerned with three sets of problems: the sources of the phenomenon; the safeguards which prevent it from giving rise to ambiguity; finally, the conflicts to which it can lead. Among the sources, native as well as foreign influences have been investigated.[53] Conflicts between two or more senses of the same word have two varieties: some are due to genuine ambiguity, others to undesirable associations. Dialectologists and linguistic geographers have thrown fresh light on these processes and have been able to specify some of the factors which lead to clashes and to the disappearance of one or more of the meanings involved (see esp. Jaberg 1936:ch. 2). Gilliéron even believed that the vitality of a whole word may be undermined by such conflicts; in his view, 'homonymic clashes and hypertrophy of meaning have been a perpetual menace in language, a perennial cause of the disappearance of words' (1918:157).[54] It would seem, however, that polysemy seldom leads to the total eclipse of a term; usually it will be sufficient to discard one or more of the incompatible senses. In one of the fullest monographs on the subject, the history of 120 English adjectives, many of them highly ambiguous, was re-examined, and it was found that only three — $2^1/_2$ per cent — have disappeared altogether (Rudskoger 1952:439).

Research on homonymy received a powerful impetus from the work of Gilliéron and his followers on homonymic clashes, and for a long time this aspect of the phenomenon overshadowed all others. Latterly, however, other important problems arising in this field have also been explored. One of these is the distinction between three types of homonyms:[55] 'homographs' (identical spelling, different pronunciation: *tear* 'rend' – *tear* 'drop from the eye'), 'homophones' (different spelling, identical pronunciation: *tear* 'rend' – *tare*), and 'homonyms' in the narrower sense (*pound* 'weight or money' – *pound* 'enclosure' – *pound* 'crush'). Native and foreign sources of homonymy

[52] See also Buyssens 1965, section 1; Frei 1961:42ff. and Muller 1962. Cf. also various East European contributions listed in my *Language and style*, p. 33, n. 3, as well as Ducháček 1967:69ff. and Trnka 1967.

[53] For details see my *Semantics*, pp. 159ff.; on foreign influence cf. Deroy 1956:93ff. and Hope 1960.

[54] Cf. Iordan and Orr 1937:165ff. and Gamillscheg 1951:170ff.; cf. also Menner 1945.

[55] Cf., on somewhat different lines, Heger 1963.

have also been examined, and so have the various safeguards which, in the vast majority of cases, obviate any possibility of misunderstanding.[56] Another interesting aspect of homonymy is its relative frequency in a given language, and its connexions with word-length and word-structure, which is of direct relevance to semantic typology (cf. Jespersen 1933b, Harmer 1954:ch. 4, Schönhage 1948,[57] Miron 1960, Seiler 1962, and from outside our area, Trnka 1935:57ff.).

The study of homonymic clashes owed its popularity to the precision and the dramatic quality of some of Gilliéron's reconstructions of these conflicts. Bloomfield's comments on one of the most famous of these are worth quoting. In part of South-West France, final [-ll] has changed to [-t], which led to the coincidence of the descendants of Lat. *gallus* 'cock' and Vulgar Lat. *cattus* 'cat', both of which became *gat*. The conflict which ensued was resolved by replacing *gat* 'cock' by local forms of *faisan* 'pheasant' and *vicaire* 'curate' (or more probably *viguier* 'provost'). As Bloomfield points out, it is a 'remarkable fact that the isogloss which separates the queer words [aza^{n}] and [begej] from the ordinary [gal], coincides exactly with the isogloss between [-t] and [-ll]; this is highly significant, because isoglosses — even isoglosses representing closely related features — very rarely coincide for any considerable distance (1933:398).[58]

These enquiries into homonymic conflicts, and into the remedies available for resolving them, have yielded some very useful results for semantic theory. They clearly showed that in these unstable situations, synchronic and diachronic factors are inextricably interlinked: a diachronic process, such as the change from [-ll] to [-t], creates a synchronic crisis, in this case the intolerable ambiguity of the form *gat*, which is then resolved by another diachronic move: the replacement of one of the two homonyms by more viable alternatives.[59] Homonymic conflicts are also of considerable importance to the etymologist and, as will be seen, to the structural semanticist: they take their place in that network of formal and semantic associations which can influence the development of words in a variety of ways. Although interest in homonymic clashes has slackened in recent years,[60] semanticists and etymologists have generally become more aware of these processes than they were before Gilliéron, and the lessons learnt from these enquiries have been absorbed into semantic theory.

[56] See on these my *Semantics*, pp. 176ff.

[57] Reviewed by Gougenheim 1952.

[58] For a general survey of the work done on homonymic clashes by Gilliéron and his school, see Iordan and Orr 1937, ch. 3, as well as the books by Wartburg (1963) and Orr (1953, 1962). Cf. also my *Semantics*, pp. 180ff.

[59] See in particular Wartburg 1963:148ff., and my *Language and style*, ch. 4. Cf. also Leroy 1962: 105f., and his book, *The main trends in modern linguistics* (1967), pp. 137f.

[60] One of the most influential exponents of Gilliéron's ideas in recent years was the late J. Orr; cf. in particular his article in the form of a dialogue, "On homonymics", and other papers reprinted in *Words and sounds in English and French* (1953), some of them also in *Three studies on homonymics* (1962). Cf. also the reservations expressed by Rothwell 1962b; a reply by Orr was published posthumously in the same journal (17.77–90).

4. HISTORICAL SEMANTICS

As already noted (see above, p. 351f.), semantics remained until the 1930s a predominantly historical discipline. The year 1931 appears in retrospect as a decisive turning-point in the development of semantic studies. In that year, Gustaf Stern published his monumental *Meaning and change of meaning* which contained one of the fullest and best-documented classifications of semantic changes ever put forward, and thus marked the culminating point of an important phase in the history of semantics. At the same time, Stern also devoted considerable space to synchronic aspects of meaning and to their philosophical and psychological implications; amongst other points, he drew attention to recent work on aphasia and its relevance to semantic problems (1931:90ff.).[61] The same year also saw the appearance of Jost Trier's monograph on terms for knowledge and intelligence in German, which was to play a vital part in the development of structural semantics and will be discussed in the next section.

During the period between the end of the First World War and 1931, there was intensive activity in the field of historical semantics in Western Europe; a number of ambitious schemes of classification and interpretation were put forward, and some of them had a considerable influence on subsequent research. They attacked the problem from several angles: some were concerned with the ultimate causes of changes of meaning, others with the psychological conditions governing them; a third group of linguists, including Stern himself, were more eclectic and empirical in their approach.

a) Classifications of semantic changes according to their causes had always been popular: one early semanticist had distinguished ten main causes,[62] another as many as thirty-one (Grasserie 1908, I:89ff.). In an article already referred to, Antoine Meillet (1905–06) had tried to reduce the problem to manageable proportions by setting up three broad types of semantic change: those due to linguistic, historical, and social causes. A few years later, another scholar added a fourth type to Meillet's three: changes due to psychological factors (Nyrop 1913:79ff.). A subsequent proposal by a Swedish linguist (Wellander 1917...) did not find wide acceptance and has been described as a mere terminological curiosity;[63] he divided semantic processes into four groups: 'subreption' (modifications of the referent), borrowing, name-giving, and change of meaning proper, such as e.g. the ellipsis whereby *Limburger* came to stand for the phrase 'Limburger cheese' in German.[64]

Much more far-reaching in its effects was another theory concerning the motivation

[61] On the relevance of aphasia to semantic problems, see my *Language and style*, ch. 10 ("Words and concepts"); cf. Brain 1956.

[62] On the ten causes enumerated by K. Schmidt in 1894, see Kronasser 1952:37f.

[63] Schwietering 1925:154. On Wellander's scheme, cf. also my *Principles of semantics*, pp. 206ff. The English terms used are those suggested by W.E. Collinson in his review of Wellander and other books on semantics (1925).

[64] On ellipsis as a factor in semantic change, see in particular Keller 1944, and other works listed in my *Semantics*, p. 222, n. 3.

of semantic changes, that put forward by Hans Sperber in 1923 in his brief introduction to semantics.[65] In this work, which showed clear traces of the influence of Freud, Sperber argued that emotive overtones play a significant part in changes of meaning. Subjects in which a community is intensely interested will not only attract synonyms from various directions, as we have already seen; they will also supply metaphorical equivalents for all kinds of other experiences. Such spheres will act therefore both as centres of attraction and as centres of 'expansion'. French military slang during the First World War provides some amusing examples of both tendencies. Certain awe-inspiring weapons suggested analogies for everyday phenomena: thus beans were described as 'shrapnels', and a woman with many children as a 'machine-gun'; conversely, the machine-gun was robbed of its terror by being compared to such familiar objects as a 'coffee-mill' or a 'sewing-machine'; similarly, a tank was nicknamed 'rolling kitchen'. Sperber summed up his theory of expansion (1930:67) in the following 'law': 'If at a certain time a complex of ideas is so strongly charged with feeling that it causes *one* word to extend its sphere and change its meaning, we may confidently expect that other words belonging to the same emotional complex will also shift their meaning.'[66] Although Sperber obviously overestimated the importance of emotive factors in semantic change, his findings were certainly applicable to a wide range of phenomena, linguistic as well as stylistic.[67] Another useful concept he evolved was that of 'consociation': in order to ascertain the applied meaning and emotive overtones of words, he recommended a study of their 'consociations': 'the most prevalent and characteristic contexts' in which they tended to be used in a given period (Collinson 1925:105).[68]

b) The psychological conditions underlying semantic changes had already been investigated by Wundt at the turn of the century. In the 1920s, this approach was broadened and deepened under the influence of Bergson's philosophy and Saussure's theory of language.[69] Eventually, there emerged a classification based on the associative processes governing changes of meaning. These associations may arise either between senses or between names; they may be suggested either by some similarity between two phenomena or by their contiguity (contact in space or in time, causal connexions, etc.). There are thus four cardinal types:

1. Similarity of the two senses (metaphor): we call a petty annoyance a *pin-prick* because its effects are comparable to the physical irritation caused by the prick of a pin.

2. Contiguity of the two senses (metonymy and allied figures): *bricks and mortar*

[65] Cf. also a later book by Sperber and Estrich 1952.

[66] The English translation is the one given by Collinson 1925:106.

[67] Cf. Springer 1938; Struck 1954: 1st ed., pp. 40ff.; Spitzer 1948:5f., and my *Semantics*, pp. 201ff. On a particular case of semantic change due to emotive factors, see Piron 1953.

[68] The concept of 'consociation', first used by Noreen, was developed by Sperber in his 1922 article.

[69] See in particular Roudet 1921, and, outside our area, Gombocz 1926. Rather similar to this scheme is the one put forward by Falk 1920. On the development and present form of this theory, cf. my *Principles of semantics*, pp. 213ff., and Guiraud 1955:43ff.

used in the sense of 'houses, house property' because they are the essential materials employed in building.

3. Similarity of the two names. This is a special form of popular etymology, which leads to a change in the meaning of one of the terms in question. These processes have been described as 'pseudo-semantic developments' because they are due, not to the spontaneous evolution of the meaning of a word, but to its accidental assonance with the form of another term. In this way, Fr. *fruste* 'worn, defaced' has acquired the sense 'rough, unpolished' because of its phonetic similarity to *rustre* 'boorish, loutish, clownish'.[70]

4. Contiguity of the two names — or, in more modern terms, their frequent co-occurrence in habitual collocations. The commonest form of these collocational sense-changes is ellipsis, e.g. *head* for *headmaster*, or, with a change in word-class: *the main* for *main sea*.

Of all the various classifications of semantic changes, this is the one which lends itself most easily to structural treatment. To this end, however, the concept of association itself has to be reinterpreted in structuralist terms: rather than denoting simple binary relations between two names or two senses, these associations will have to be regarded as forces operating within the 'associative field' of the words involved, on the lines to be discussed in the next section.

c) Two of the best known schemes of classification put forward during this period were rather more eclectic in orientation. In 1927, A. Carnoy published a highly elaborate system whose numerous subdivisions were ultimately based on a simple dichotomy: gradual and involuntary changes on the one hand ('métasémie évolutive'), sudden and intentional ones on the other ('métasémie substitutive' or 'diasémie'). Stern's scheme was the result of an interesting combination of empirical and deductive methods. On purely empirical grounds, he found that the material he had collected fell into seven categories. He then tried to correlate his findings with the analytical definition of meaning he had formulated in an early chapter of his book, according to which 'the meaning of a word — in actual speech — is identical with those elements of the user's (speaker's or hearer's) subjective apprehension of the referent denoted by the word, which he apprehends as expressed by it' (Stern 1931:45). The combination of the two sets of criteria resulted in the following system:

A. External Causes. . . . . *Class I. Substitution.*

B. Linguistic Causes:

I. Shift of Verbal Relation . . . . . a) *Class II. Analogy.*
b) *Class III. Shortening.*

II. Shift of Referential Relation . . a) *Class IV. Nomination.*
b) *Class V. Transfer.*

[70] Cf. Orr 1953: ch. 15. On these processes, see especially Hatzfeld 1924 and Ammann 1925.

III. Shift of Subjective Relation. . . a) *Class VI. Permutation.*
b) *Class VII. Adequation.*
(Stern 1931:175)

It may be noted that a detailed comparison of this system and the one based on associations has shown that all the main divisions in each scheme had their counterpart (or counterparts) in the other (cf. Ullmann 1963:247ff. and Guiraud 1955:48f.).

After 1931, a radical change of orientation took place in West European semantics, as elsewhere, and the historical approach lost the predominant position which it had enjoyed so far. During the next twenty years, no comprehensive work was published on the subject, in sharp contrast to the ambitious attempts at synthesis in the preceding period. Since the 1950s, there has been a spectacular revival of interest in semantics, but with a very different emphasis. As already noted, synchronic and structural questions are in the centre of attention, and the traditional problems of historical semantics have been relegated to the background, unless they can be restated in structural terms.[71] This does not mean, however, that these matters are nowadays completely neglected. In some of the latest textbooks, historical phenomena still occupy a prominent, or even a dominant, place (cf. e.g. Gamillscheg 1951, Kronasser 1952, Ducháček 1967, and Koziol 1967); there is also continuing interest in some of the fundamental aspects of semantic change (see Bachmann 1935, Gill 1953, Cremona 1959; and from outside our area, Svoboda 1960, Antal 1964b) as well as in certain specific processes, especially those which also concern other disciplines, such as metaphor[72] or taboo and euphemism.[73]

Another traditional theme in historical semantics, the search for general tendencies, has been stimulated by current interest in universals, which has already been mentioned (p. 355). The quest for 'laws' has always been one of the principal preoccupations of West European semanticists. It will be remembered that Reisig had already spoken of the 'principles governing the development of meaning', and Bréal (1883) of the 'laws' underlying semantic changes and other lexical processes. These pronouncements were echoed by subsequent generations; an influential linguist wrote e.g. in 1925: 'There are universal laws of thought which are reflected in the laws of change of meaning ..., even if the Science of Meaning ... has not yet made much advance towards discovering them' (Jespersen 1925:212). Others, including Saussure himself, were more sceptical (1949:132);[74] at the turn of the century, a French etymologist declared:

[71] See on this question my 1967c article.

[72] A useful survey of the rich literature on metaphor will be found in Meier 1963. Among major West European contributions, see also Werner 1919; Esnault 1925; Konrad 1939; Stutterheim 1941; Brooke-Rose 1958; *Metaphor and symbol*, ed. by L.G. Knights and B. Cottle (1960), as well as other works cited in my *Semantics*, p. 212, n. 2.

[73] On these, see *ibid.*, p. 204, n. 3; cf. especially Havers 1946. See also more recently Galli de' Paratesi 1964 and Widlak 1965. Among recent works from outside our area, see in particular Guérios 1956 and Kany, *American-Spanish euphemisms* (1960a); on the latter, cf. now Rabanales, "Eufemismos hispanoamericanos" (1966–67).

[74] For similar views by other linguists, cf. my *Principles of semantics*, pp. 250ff.

'There are no laws in semantics, and it is difficult to imagine that there could ever be any' (Thomas 1904:28), and half a century later, a leading authority on historical semantics was hardly less negative: 'In semantic development, so many different and at times contradictory tendencies are involved that it is impossible to speak of any laws. Semantics resolves itself into a wealth of particular problems. It shows only what *may* happen, not what *must* happen, in the field of semantic change' (Gamillscheg 1958b:291). Undeterred by these difficulties, several semanticists have tried to formulate general laws. Bréal (1897:26) had already spoken of a 'law of the distribution of synonyms', according to which words which were once synonymous subsequently tend to be differentiated. Sperber, as we have seen, stated his theory of 'semantic expansion' in the form of a law (cf. p. 363), and there were several other attempts in the same direction.[75] On the whole, however, the results were so disappointing that a well known linguist could seriously claim in 1943 that 'no one has ever thought of offering a "semantic law"' (Spitzer 1943:427).[76]

The failure of earlier attempts to discover 'semantic laws' has brought the whole concept into disrepute, and nowadays few semanticists would use the term 'law' (Terracini 1938:110) in this context;[77] they would prefer to speak, more modestly, of general tendencies which may or may not be statistically formulable.[78] There are two kinds of general tendencies in historical semantics. The more limited type comprises cases of parallel development, provided that it can be clearly shown that the parallelism is genuine and that there can be no question of influence or imitation. An interesting parallel metaphor of this kind is the image underlying Lat. *pupilla* and its modern descendants, where the pupil is compared to a small girl, or sometimes to a small boy, because of the similarity between a child and the minute figure reflected in the eye. This is found not only in Indo-European forms like Gr. *kórē*, Fr. *pupille*, Sp. *niña (del ojo)*, Port. *menina (do olho)*, etc., but also in other language-groups: examples have been discovered in some twenty non-Indo-European idioms as remote from each other as Lapp, Chinese, Samoan, and Swahili (Tagliavini 1949:363ff.).[79] Parallel tendencies of the same kind also exist in other types of metaphor and in other forms of semantic change, such as metonymy, taboo, pejorative sense-development, etc.[80]

There are also general semantic tendencies with a wider scope. Thus it has been suggested that restriction of meaning is more common than extension (Bréal 1897:107, Vendryes 1950:237; see also Bloomfield 1933:151; Werner 1954; cf. recently Schreu-

[75] Cf. also Leumann 1927:117f.; Esnault, "Lois sémantiques" (1949, ch. 3); Meriggi 1934:65ff., and other works quoted in my *Principles of semantics*, p. 249, n. 1. On Stern's 'law' concerning the sense-development of English adverbs for 'swiftly', see Stern 1921.

[76] Cf. G. Bonfante's comments in *Word* 1.146 (1945).

[77] It is, however, interesting to note that as recently as 1957, a leading Soviet linguist criticized contemporary semantics for having turned away from its main task: the study of specific laws of linguistic development (Zvegintsev 1957:46).

[78] On 'statistical universals', see Greenberg, Osgood and Jenkins 1966:xx.

[79] On parallel developments see also Sauvageot 1953 and Schröpfer 1956.

[80] On pejorative changes of meaning, see the references in my *Semantics*, p. 231, n. 1, in particular Schreuder 1929. Cf. recently Hope 1962–63.

der 1956), and that there are more anthropomorphic metaphors than transfers to the human sphere: the type *eye of a needle* is more frequent than the type *apple of the eye*.[81] A similar tendency, for which we possess some numerical data from various languages, is the general movement of 'synaesthetic' metaphors where a word is transferred from one sensory domain to another: *cold voice, sharp sound, loud colour*. It would seem that such transfers are not haphazard but tend to proceed from the less differentiated towards the more differentiated senses: over eighty per cent of a total of two thousand examples showed this upward trend. The data available so far also suggest that the sphere of touch is the commonest source of synaesthetic metaphors, and the sphere of sound their main destination.[82] Further investigations on an interlinguistic basis may confirm these tentative findings and may bring to light other 'panchronic' tendencies some of which could be formulated in terms of statistical probability.

5. STRUCTURAL SEMANTICS

'We can think of grammar as few items in complex patterns, lexis as many items in simple patterns' (Halliday, McIntosh and Strevens 1964:34).[83] This formula explains very clearly why structural methods, which revolutionized other branches of linguistics many decades ago, have been so slow to penetrate into lexical studies. The difference between grammar and vocabulary is ultimately a matter of closed versus open sets. 'A closed set of items is one of fixed, and usually small, membership: e.g. the set of personal pronouns, tenses, genders, etc. An open set is one of unrestricted, indeterminately large, membership; e.g. the class of nouns or verbs in a language. In terms of this distinction we can say that grammatical items belong to closed sets, and lexical items to open sets' (Lyons 1968:436. Cf. also Martinet 1964:110f., Hjelmslev 1959, Pottier 1964:119, Togeby 1965:4. Cf. however Vincenz 1966). One consequence of the difference between closed and open sets is that the vocabulary is much less strictly organized and less stable than the patterns encountered in phonology and grammar: words or meanings can be added or dropped far more freely than phonemes, inflexions or suffixes.

In spite of these formidable difficulties, structural semantics has become extremely popular in recent years, in Western Europe as elsewhere, and some promising results have already been achieved. These researches are being pursued at three distinct levels: that of single words, lexical fields, and the vocabulary as a whole.

[81] On anthropomorphic metaphors, see Witte 1948.

[82] For details see my *Principles of semantics*, pp. 266ff., and the works listed in *Language and style*, p. 87, n. 1. On synaesthesia see now Schrader 1969.

[83] On the structure of 'lexis' and its relations to grammar and semantics, see also a later article by Halliday, "Lexis as a linguistic level" (1966).

5.1 *The Word and its Associative Field*

The term 'associative field' was introduced into linguistics by Bally in 1940, but the idea itself had already been foreshadowed by Saussure. In an often-quoted passage of his *Cours*, he had described each word as 'the centre of a constellation, the point where an indefinite number of other coordinated terms converge', and had represented in the form of a diagram the various types of association — formal, semantic, or both — which connect each lexical item with a number of others (1949:174f.). To take a very simple English example, the verb *read* is connected semantically with *peruse*, *write*, *say*, *book*, and other terms; formally with the homonymous *reed*; both formally and semantically with the derivatives *reader*, *reading*, *readable*, *re-read*. These ideas were subsequently developed by various linguists and psychologists.[84] Although these associative fields are obviously subjective, unstable, and highly variable, some of the associations are so strong and so widespread that they may influence the development of words in a variety of ways. As we saw in the preceding section, changes of meaning can be explained in terms of such associative influences, whether they are based on similarity or on contiguity, and whether they arise between names or between senses.[85] Certain phonetic and grammatical changes, usually attributed to analogy, popular etymology or contamination, may be due to the same agency. To return to the associative field of the verb *read*, several forms of Fr. *lire – lisant*, *lise*, *lisons*, etc. — show traces of the influence of another verb in the same sphere, namely *dire*; furthermore, a third verb in the same area, OF. *escrivre* (< Lat. *scribere*), has been changed to *écrire* on the model of the semantically associated *dire* and *lire*.

The concept of associative field is of great heuristic value to etymology and historical semantics. Not only can it lead to the solution of baffling etymological problems,[86] but it can also put the linguist on his guard against oversimplified explanations which conceal the great complexity of the processes involved. The leading Romance etymologist of our time, W. von Wartburg, has given a striking example of this method. The change of meaning from Lat. *coxa* 'hip' to French *cuisse* 'thigh' seems at first sight a straightforward semantic shift due to 'contiguity between two senses' (see above, p. 363f.). On closer inspection, however, it turns out to have been caused by various disturbances in the associative field of *coxa*. Lat. *fimus* 'dung, excrement' changed in Vulgar Latin to *femus*, *femoris*, under the influence of its

[84] In addition to the works of P. Guiraud, see e.g. Frei 1942, and my 1967c article; cf. also, outside our area, Cazacu 1957, Luria and Vinogradova 1959. On these and other approaches to structural semantics, see a recent survey by Ikegami 1967, as well as several contributions by O. Ducháček, in particular 1967:30ff. and 1968.

[85] Needless to say, there are also 'composite changes' in which two or more different types of association are involved; see on these my *Principles of semantics*, pp. 240ff.

[86] Cf. e.g. P. Guiraud's reconstruction of the semantic development of Fr. *maroufle* 'rogue, scoundrel; strong paste for remounting pictures'. He found the connecting link in the fact that *maroufle* once also meant 'large cat' and that its synonym in this sense, *chat*, has a homonym, *chas* 'starch paste, dressing' (1956:269ff.).

synonym, *stercus, stercoris*. This led to a homonymic clash — aggravated no doubt by taboo associations — between it and *femur, femoris* 'thigh', as a result of which the latter word disappeared and was replaced by *coxa*. However, the same term could not be used in the sense of both 'hip' and 'thigh': *coxa* was therefore restricted to the latter meaning, and the Germanic word **hanka*, Mod. Fr. *hanche*, was taken over as a new name for 'hip' (von Wartburg 1963:127).[87] Behind the apparent simplicity of a slight shift in meaning, there was thus a complicated chain-reaction involving five different words connected with each other by formal or semantic associations.

The theory of associative fields, which refuses to view words as isolated units and places them in a wider context of sound-and-sense associations, is in line with current trends in etymological research. As Wartburg himself has pointed out, 'whoever wishes to write today the etymology of a word must not be content to note the disappearance of a meaning or the addition of a new sense. He must also try to find out which is the lucky rival, the heir to the meaning which has disappeared, or which is the word from which the term in question has taken its new sense ... To trace the root of a word or a group of words is no longer the only task of etymology. It must follow the group in question throughout the period when it belonged to the language, in all its ramifications and all its relations with other groups, without ever ceasing to ask the questions which pertain to etymology in the proper sense of the term' (von Wartburg 1963:125, 130f.). The most vigorous exponent of the theory of associative fields among West European linguists, Pierre Guiraud, has gone even further: in a recent book he advocates the study of 'etymological structures' which he describes as 'lexical categories' formed by the totality of words having certain features in common. The features they share may be either formal or semantic or both. These structures may also be conceived of as 'models', 'paradigms', or 'matrices' capable of generating new formations. Each structure is a 'macro-sign' as opposed to individual words which are 'micro-signs' integrated into these lexical categories (Guiraud[88] 1967:191f.). In his book, Guiraud examines in detail six types of etymological structures: morphological, semantic (e.g. animal metaphors), onomatopoeic, paronymic, morphosemantic, and 'semic' (e.g. popular taxonomies). He concludes, with an obvious reference to the distinction between deep structure and surface structure in current grammatical theory: 'Structural analysis offers entirely new procedures and methods to etymology. So far the latter has remained at the surface of signs, at the level of usage and of the alphabetical dictionary. All its definitions will have to be rephrased in terms of the deep level of the system' (1967:195).

[87] Cf. also Baldinger 1959:237ff. and Gamillscheg 1958a. The 'complexity of etymological solutions' has often been emphasized by Y. Malkiel; cf. recently his *Essays on linguistic themes* (1968), p. 246 and passim. On semantic problems raised by linguistic reconstruction, see in particular Bonfante 1945; Benveniste 1954; Szemerényi 1962. Cf. Hoenigswald 1960.

[88] See also by the same author a number of articles listed in the bibliography, as well as some of his books in the *Que sais-je?* series, in particular *Les locutions françaises* (1961) and *L'étymologie* (1964).

5.2 *Lexical Fields*

Lexical fields represent an intermediate level between single words and the vocabulary in its entirety. They are closely integrated sectors of the lexicon, in which a certain sphere of experience is divided up and organized in a particular way which may vary from one language or one period to another. A rather trivial system of this kind, the hierarchy of military ranks, had been studied as far back as 1910 by Meyer, but it was not till 1924 that the term 'semantic field' ('Bedeutungsfeld') was introduced[89] into linguistics; at that stage it was described as a mosaic of words, 'whose contours fit together and which resolve themselves into a semantic unit of a higher order' (Ipsen 1924:225). Once this key-concept had been crystallized, further progress was quite rapid: a number of important articles culminated in 1931 in Jost Trier's fundamental monograph on German intellectual terminology, which has already been referred to.[90] Since then, the 'field theory' has been one of the most active sectors of West European semantics. In the course of time, Trier's own research interests shifted to somewhat different problems, and another early advocate of the new approach, Leo Weisgerber of Bonn, became the recognized leader of the movement.

In the history of ideas, the field theory stands at the point of intersection of two important currents of thought: Saussurean structuralism and Humboldt's doctrine on relations between language and thinking. The concept of a lexical field as a highly organized totality whose elements define and delimit each other and derive their significance from the structure as a whole is essentially Saussurean; the influence of Humboldt's philosophy — which has such a remarkable affinity with transformational-generative grammar[91] — can be seen in the view that these fields are expressions and depositaries of a unique *Weltanschauung* and a specific hierarchy of values. Hence the description of the movement as 'Neo-Humboldtian ethnolinguistics'.[92] Other factors, such as phenomenology and E. Cassirer's ideas about the influence of language on thinking, have also played a certain part in the development of the field theory.

Since this theory seeks to discover what is unique and idiosyncratic in the organiza-

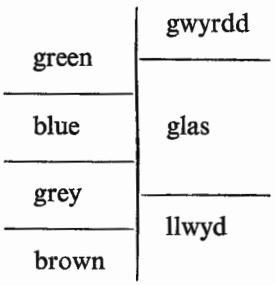
[89] According to O. Ducháček (1960a:26), the term had been used before Ipsen by A. Stöhr in his *Lehrbuch der Logik* (1910). On a mid-nineteenth-century precursor of the field theory, see Coseriu 1967c.

[90] Other contributions by Trier are listed in my *Semantics*, p. 245, n. 1. Some of the numerous books and articles dealing with the field theory are mentioned *ibid.*, n. 3; see in particular L. Weisgerber's early essay, "Die Bedeutungslehre — ein Irrweg der Sprachwissenschaft?" (1927), and his four-vol. *Von den Kräften der deutschen Sprache* (1962); Öhman 1951, and her 1953 article; various articles in *Sprache — Schlüssel zur Welt. Festschrift für L. Weisgerber* (Düsseldorf, 1959). Among more recent works see Gipper 1963; Kühlwein 1967, especially pp. 39ff.; Seiffert 1968b; Miller 1968. A very useful by-product of the field theory is the *Bibliographisches Handbuch zur Sprachinhaltsforschung* which H. Gipper and H. Schwarz have been publishing in instalments since 1961.

[91] This has been repeatedly emphasized by Chomsky 1964:17ff., 1965:4 and 8f., 1966:19ff. and 70ff., 1968:15ff.

[92] See Basilius 1952, and the works of Miller (1968) and Seiffert (1968a).

tion of a particular sphere in a given idiom, its method is essentially comparative and contrastive: it will examine the structure of the same field in different languages or in successive periods in the history of the same language. In many cases, such comparisons will reveal what has been called the 'anisomorphism' of lexical fields: the same sphere will be divided up on different principles, with no exact correspondence in the boundaries or even the number of segments. A well known example is provided by the system of colour distinctions in English and Welsh:[93]



As this example shows, even the raw material of concrete experiences can be organized in various ways, especially when the phenomena in question form a continuum which can be split up into a greater or lesser number of segments, and analysed from a number of different points of view.

Since the emergence of the field theory, a wide variety of fields has been explored by West European semanticists. Among concrete spheres, colours have naturally received a great deal of attention.[94] Kinship terms have also been investigated, though not on anything like the same scale as in the United States where 'componential analysis' (see below, section 5.3) achieved some of its most spectacular successes in this area.[95] Other concrete spheres which have been examined include Alpine landscape (Zinsli 1946), the terminology of dwelling (Mounin 1965a), and the nomenclature of domestic animals (Mounin 1965b). Naturally, however, interest has mainly centred on abstract fields where the role of language as the organizer of experience is even more strikingly in evidence. Apart from the sphere of intellectual qualities, where Trier and his disciples had obtained their early successes, work has also been done on such diverse topics as aesthetic (Ducháček 1959, 1960b, 1961) and moral (Trier 1948; Palmer 1956) values, the nomenclature of psychological (Sckommodau 1933), religious and mystical experiences,[96] and, at a more specialized level, on words denot-

[93] This example is taken from Hjelmslev's *Prolegomena to a theory of language* (English transl., 1953), quoted by Christensen 1961:185f. On 'anisomorphism' see Lyons 1968:55, 429, 457.

[94] See especially Skard, *The use of color in literature* (1946); *Problèmes de la couleur*, ed. I. Meyerson (1957); Matoré, "A propos du vocabulaire des couleurs" (1958). H.C. Conklin's classic paper, "Hanunóo color categories" (1955), is discussed in Lyons 1968:431. Cf. *Times Literary Supplement* 1970:797 (Lyons' comments on B. Berlin and P. Kay's *Basic color terms*).

[95] See e.g. Dumont 1953 and 1957; Galton 1957; Irigaray and Dubois 1966. One of F.G. Lounsbury's papers on componential analysis as applied to kinship terms has been translated in *Langages* 1 (1966).

[96] Cf. the comments of W. Rothwell (1966) on the work of H. Hatzfeld in this field. See also Rheinfelder 1951.

ing enmity in Old English poetry (Kühlwein 1967), and on adjectives expressing value-judgments in Caxton (Brekle 1963).

The field theory has been severely criticized on a number of grounds. It has been argued that it is extremely difficult to find criteria for the delimitation of lexical fields; that these fields are not as rigorously organized as the proponents of the theory have claimed; that it is unrealistic to assert that the entire vocabulary is covered by fields in the same way as individual fields are covered by words; that the movement has grossly overestimated the influence of language upon thought, etc.[97] As a recent critic has put it, 'the claims for thorough systematization made by Trier and his immediate followers cannot be substantiated, and the images they used — the net, the mosaic, the divided field — however expressive, have proved inadequate' (Seiffert 1968a:98). Another linguist, who has just published a detailed re-appraisal of the whole theory, has spoken of 'the patent circularity of claiming that thought processes are different among speakers of different languages, and of appealing to linguistic facts alone to demonstrate the truth of this claim' (Miller 1968:119). There is no doubt some substance in these and other criticisms, but they must not be allowed to obscure the great merits of the theory and the valuable part it has played, and continues to play, in semantic studies. The following positive aspects of the field approach seem to be of particular importance:

a) In sharp contrast to the atomism of traditional semantics, the field theory is more interested in the structure of lexical systems than in the elements of which these are composed. In this respect it goes even further than the theory of associative fields which is centred on single words, even though it puts them in a wider perspective than was customary in traditional semantics.

b) The field theory has considerable heuristic value in that it enables the linguist to formulate problems which would otherwise have passed unnoticed.

c) It provides a new method for studying the influence of words on conceptualization and on thinking in general. From this point of view there are marked affinities between this theory and the Sapir-Whorf hypothesis, and the two approaches usefully supplement each other since they work on different languages and utilize different data.

d) The field theory has succeeded in extending the structural approach to diachronic problems. Saussure had strongly emphasized the contrast between descriptive linguistics, which deals with systems, and historical linguistics, which is concerned with particular items: 'Each move in chess involves one piece only; in the same way, changes in language are confined to isolated elements' (Saussure 1949:126). To this rigid conception, Trier and his school have opposed a more flexible model, a kind of 'comparative statics' in which description is closely linked with history: 'an account leap-frogging from one cross-section to another, focusing again and again on *the field as a whole*, looking both backward and forward in time' (Trier 1931:13). Trier

[97] See in particular Scheidweiler 1942; Betz 1954; Konradt-Hicking 1956; Kandler 1959; Ricken 1961b; Spence 1961; Rothwell 1962a. Among recent criticisms, see the works of Kühlwein 1967, Miller 1968, Pottier 1964, Seiffert 1968a, and Todorov 1966.

himself has given a famous demonstration of this method in his comparative study of German intellectual terminology around 1200 and a century later, showing how the earlier system had been based on two principles: feudalism and the unity of mundane and religious knowledge, and how, within a hundred years, these two principles had lapsed and the field had been re-structured on different lines (Trier 1934; cf. von Wartburg 1963:169ff.).

In addition to the field concept discussed so far, a number of alternative models have been proposed, some in the early 1930s, others more recently. Three of these may be mentioned briefly.[98] In 1934,[99] W. Porzig put forward a 'syntagmatic' theory of fields, which was totally different from the 'paradigmatic' approach of the Trier school. His fields are binary structures based on what he calls 'essential semantic relations' ('wesenhafte Bedeutungsbeziehungen'): pairs of words which imply one another, such as *dog – bark*, *tooth – bite*, *tree – fell*. This suggestion had little immediate influence, but recent research on syntagmatic aspects of structural semantics (see below, section 5.3) has led to some revival of interest in this early experiment (see Kühlwein 1967:41ff.; Baumgärtner 1966; Leisi 1961).

Nearly thirty years later, John Lyons published an important monograph on intellectual terminology in Plato (1963), based on a new concept of fields which he subsequently developed in his (1968) *Introduction to theoretical linguistics* (cf. Baumgärtner 1966:193ff.). In this latest book, he defines the 'sense' of a word as 'its place in a system of relationships which it contracts with other words in the vocabulary' (p. 427). Consequently, the 'semantic structure' of lexical systems 'is to be described in terms of the sense-relations holding between the lexical items' (p. 429). The sense-relations in question are limited in number: synonymy; 'hyponymy' (e.g. *scarlet* is a 'hyponym' of *red*); incompatibility (*red – green*); complementarity (*male – female*); antonymy [100] (*big – small*); converseness (*buy – sell*). Complementarity, antonymy, and converseness are in fact different varieties of a wider category: 'oppositeness of meaning' (p. 460).

A very different field concept was evolved by G. Matoré in two books which have had considerable repercussions in France and elsewhere: *Le vocabulaire et la société sous Louis-Philippe* (1951), and, on a more theoretical plane, *La méthode en lexicologie* (1953). Both books are distinguished by their sociolinguistic orientation. Matoré proposes 'to consider the word, no longer as an isolated object, but as an element within larger wholes which we class hierarchically by starting from an analysis of social structures'(1951:9; cf. 1953:50).[101] To this end, he has examined the vocabulary of various social sectors in his chosen period: politics,[102] journalism, the salons, trades

[98] For other field concepts, see Ipsen 1932; Jolles 1934, and, more recently, Weinrich 1958, 1964.

[99] See also his book, *Das Wunder der Sprache* (3rd ed., 1962).

[100] On antonymy, see Rygaloff 1958; Vincenz 1963; Guilbert 1964. Cf. outside our area Malkiel 1951 and 1968:343f.; Komissarov 1957; Ducháček 1965. Cf. also A. Jolles's 1934 article.

[101] For a recent discussion of connexions between sociology and structural semantics, see Fabbri 1968.

[102] On this lexical field, see Weldon 1953 and Dubois 1962.

and crafts, art and science, the law, sport, and other spheres. The sociolinguistic data are arranged around two types of lexical items: 'witness-words' and 'key-words'.[103] The former are 'particularly important elements which determine the hierarchy and organization of lexicological structure', whereas a key-word is 'a lexicological unit expressing a society ... a person, a feeling, an idea which are alive in so far as society recognizes in them its ideal'(1953:65, 68). In the period around 1830, *magasin* and *négociant* are examples of witness-words, and *individualisme*, *organisation*, *bourgeois*, *prolétaire*, *artiste* function as key-words. A number of important enquiries into specialized nomenclatures have been directly or indirectly inspired by these ideas: they range from feudalism and 17th-century medicine to railway terms in the 19th century and the terminology of aviation and of the cinema. These researches, though of obvious relevance to semantics, fall within the province of lexicology which is discussed in another chapter of this volume.

5.3 *The Structure of the Vocabulary*

Research into the structure of the vocabulary is one of the central preoccupations of contemporary semantics, in Western Europe as elsewhere. A great deal of thought has been and is being given to a rational classification of concepts. As Chomsky has pointed out, 'it is important to determine the universal, language-independent constraints on semantic features — in traditional terms, the system of possible concepts. ... It is surely our ignorance of the relevant psychological and physiological facts that makes possible the widely held belief that there is little or no a priori structure to the system of "attainable concepts"' (1965:160). The continuing popularity of Roget's *Thesaurus*, first published in 1852, clearly shows that such classifications can serve a very useful purpose (cf. Potter 1957:168; Quirk 1962:150f.; Lyons 1968:446). In recent decades, several conceptual dictionaries have appeared (see esp. Dornseiff 1959), and the matter was on the agenda of the Seventh International Congress of Linguists, held in London in 1952.[104] In the same year, R. Hallig and W. von Wartburg brought out an ambitious scheme for the classification of concepts, which was based on two principles. Firstly, they regarded the system of concepts as an 'intermediate world' ('sprachliche Zwischenwelt') interposed by language between man and the universe, and tried to represent it as an organized structure of interdependent elements. Secondly, they adopted a point of view described as 'naïve realism': 'the intelligent average individual's view of the world, based on pre-scientific general concepts made available by language.' Concepts were divided into three broad categories, each with a variety of subdivisions: 'the Universe', 'Man', and 'Man and the Universe'. Whatever the merits or otherwise of this particular scheme (see esp. Baldinger 1952, 1956, 1960; cf. also Wüster 1959; Hiorth 1960; de Tollenaere 1960;

[103] On key-words see the series *Europäische Schlüsselwörter*, ed. by W. Schmidt-Hidding.

[104] See the *Proceedings* of that congress (London, 1956), pp. 77–89 and 343–73.

Heger 1965), it has already been applied in several monographs in the Romance field,[105] and it would clearly be useful to organize a research programme of lexical studies based on a uniform yet flexible conceptual framework which would facilitate the comparison of results.

Of far greater importance is another approach to the problem of lexical structure, which has begun to take shape, on both sides of the Atlantic, during the last few years. It may be loosely described as 'componential analysis' since it seeks to split meaning — or, more precisely, the *signifié* — into its ultimate components. It should be noted, however, that the foremost West European representatives of this movement do not usually refer to their method as componential analysis.[106] Although these experiments have obvious affinities with the componential study of kinship terms in America,[107] and, on a more general plane, with the Katz-Fodor theory, there has been little or no direct influence; the Katz-Fodor model has in fact been strongly criticized by some West European linguists working on these lines.[108]

At this early stage, when there is as yet no consensus of opinion on aims, methods, or terminology, it is impossible to offer more than a very tentative interim report on this latest branch of West European semantics. A. J. Greimas's (1966) *Sémantique structurale* (review by Ullmann, 1967d), which is the most ambitious synthesis published so far in this field and has already attracted considerable notice, may provide a convenient starting-point. Greimas's analysis is based on the Saussurean dichotomy of *signifiant* and *signifié* between which there is a relationship of 'reciprocal presupposition' (p. 10). Terms which have a 'common semantic denominator', e.g. the idea of colour in the pair *black – white*, or size in *large – small*, lie on the same 'semantic axis', in the same way as the phonemic opposition /p/ – /b/ lies on the 'axis of voice' (pp. 20f.). Similarly, the pair *boy – girl* are located on the semantic axis of sex; consequently, the feature of masculinity may be extracted from the former, that of femininity from the latter. These minimum semantic features are termed 'semes'; they are analogous to Jakobson's 'distinctive features' in phonology and, ultimately, to the Saussurean concept of 'differential elements' (p. 22). On the plane of the *signifiant*, the smallest unit of discourse is the phoneme, whereas on the plane of the *signifié*, the minimum unit of discourse is termed 'lexeme' (p. 30). Greimas, like various other linguists, prefers to avoid the loose and ambiguous term 'word' altogether,[109] and his terminology enables him to distinguish between three types of elements: lexemes

[105] A list of these will be found in Wartburg 1963:190, n. 2. Cf. also Runkewitz 1959.

[106] Cf., however, Baumgärtner 1966 and Lyons 1968:470ff. On the other hand, T. Todorov 1966 distinguishes between 'componential' and 'semic' analysis — the latter being the method practised by Pottier and Greimas.

[107] Cf. above, n. 95.

[108] See e.g. Coseriu 1968:4ff.; cf. also Todorov 1966 and Baumgärtner 1966; Pottier 1964:108 and 1968a; Lyons 1968:473ff. On these problems, see also Bierwisch 1965. The original Katz-Fodor article has been translated into French in *CLex* 9 (1966) and 10 (1967).

[109] On the status of the word as a linguistic unit, see especially A. J. B. N. Reichling, *Het Woord* (1935), as well as Togeby 1949; Funke 1953; Hartmann 1958; Hiorth 1958; Porzig 1959; Mitterand 1963. Cf. outside our area: Rosetti 1947 and Arnold 1966.

proper (e.g. Fr. *abricot*), 'paralexemes' (*pomme de terre*), and 'syntagmas' (*pain de seigle*) (p. 38). The *signifié* of a lexeme consists of a 'semic nucleus' ('noyau sémique') and 'contextual semes'; the former is invariant, whereas the latter are variable. The combination of the two is termed 'sememe' (pp. 44f.). Contextual semes are mainly classificatory in character ('human', 'animal', 'object', etc.): they are therefore called 'classemes' (pp. 50ff.).

Some of Greimas's terms are derived from the writings of another pioneer of componential analysis, B. Pottier, who has given a striking illustration of how the method works. The lexemes *canapé* 'sofa', *fauteuil* 'arm-chair', *chaise* 'chair', and *tabouret* 'stool' are distinguishable from each other by the presence or absence of a series of distinctive features (semes):

	to sit upon	on leg(s)	for one person	with a back	with arms
canapé	+	+	−	(+)	(+)
fauteuil	+	+	+	+	+
chaise	+	+	+	+	−
tabouret	+	+	+	−	−

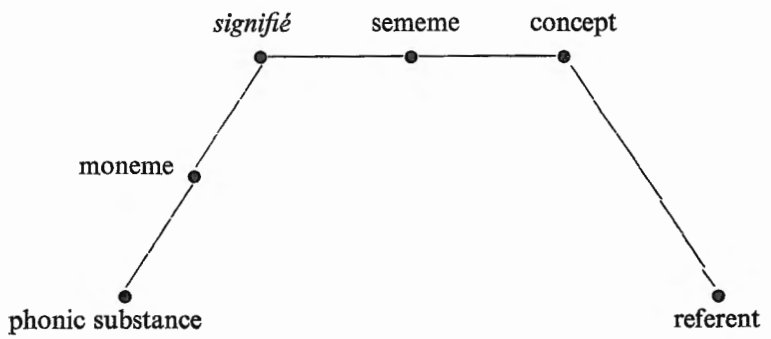
It should be noted that only the first two semes are common to all five terms: they may be regarded as their 'archisememe'. It so happens that in this particular case, there is in French a word whose meaning contains these two semes and no others: the term *siège* 'seat', which may therefore be described as an 'archilexeme' (Pottier 1965:34; cf. also Pottier 1964:122, 1967).

As can be seen from this example, componential analysis can lead to elegant formulas and ingenious solutions. When abstract terms are subjected to such 'atomization of meaning', the results can be very complex but none the less illuminating (Baldinger 1966; Bolinger 1965). On the other hand, the diffusion of these methods may be seriously handicapped by the formidable proliferation of technical terms, especially as the same term is sometimes used by various linguists in widely different ways.[110]

Two other forms of componential analysis in West European semantics may be mentioned here. One group of linguists have found the Ogden-Richards triangle insufficiently differentiated and have replaced it by a trapeze connecting no less than six elements:[111]

[110] Cf. H. Weinrich's remarks in his review of another work by Pottier (1965). In the 'Index terminologique' at the end of Pottier's article, "Vers une sémantique moderne" (1964), no less than fifteen terms in *-ème* are listed. Greimas (*Sémantique structurale*, p. 157) has defended these neologisms on the grounds that 'they do not form part of natural language, but of a secondary descriptive language, and are no more French than e.g. the symbols used in algebra'. This is no doubt true, but even a metalanguage is a medium of communication whose effectiveness is bound to suffer from an excess of jargon which varies from one scholar to another.

[111] This model, first put forward by G. Hilty, has been developed by K. Heger; see in particular his 1965 article. Cf. also by the same author, "Structures immanentes et structures conceptuelles", 1968. The same analysis has been accepted, with some modifications, by K. Baldinger; the main difference is that he would interpolate a seventh term, 'mental object', between 'concept'(or 'seme') and referent (1967:130); cf. also other articles by the same author, in particular 1968b, and his book, *Teoría semántica* (1970). Cf. recently H. Henne and H.E. Wiegand (1969).



Another skilful practitioner of componential analysis, E. Coseriu, recommends the setting up of a new branch of semantics which he proposes to call 'lexematics' (see esp. Coseriu 1968:3f. and 7; see also Coseriu 1964, 1966, 1967a). The new discipline would investigate relations between *signifiés*; it would thus be different both from 'onomasiology', which starts from the *signifié* and studies its relations with one or more *signifiants*, and from 'semasiology', which works the other way round, from one *signifiant* towards one or more *signifiés*. Coseriu's lexematics would deal with two kinds of structures: paradigmatic (lexical fields, lexical classes, modification, etc.) and syntagmatic (affinity, selection, implication); it would also have a diachronic dimension, a truly structural form of historical semantics.

These and other experiments in the analysis of lexical structure have caused West European semanticists to look afresh at relations between semantics and two neighbouring disciplines: onomasiology and syntax. Onomasiology has been for a long time very popular in dialect studies;[112] recent developments in structural semantics, in particular in the field theory and in componential analysis, have, if anything, enhanced its status by clarifying the assumptions on which it is based and the procedures which are peculiar to it.[113] The position has been summed up in these terms by an eminent semanticist and onomasiologist: '*Onomasiology* corresponds to the situation of the speaker who has to *express* his thoughts by drawing on the structured thesaurus of language; *semasiology* corresponds to the situation of the listener who hears forms already chosen, i.e. words subject to polysemy, and who has to determine the relevant meanings. In the course of a conversation, there is a continuous shuttle service (*navette*) between onomasiology (speaking) and semasiology (listening). From onomasiological analysis we switch to semasiological analysis, and vice versa' (Baldinger 1966:46).

Far more important and more complex is the problem of relations between semantics and syntax. This has always been a controversial issue in linguistic theory, and

[112] See especially Quadri 1952; see also Iordan 1962:277ff. An important recent contribution in this field is Renson 1962.

[113] See in particular two articles already referred to: Heger 1965, Baldinger 1968b; cf. Baldinger 1964, and, outside our area, Ricken 1961a-b.

transformational-generative grammar has given the matter a new urgency. West European semantics, both traditional and structural, has tended to concentrate on paradigmatic aspects of word-meaning, though syntagmatic problems have not been completely neglected: to mention but one or two examples, the study of collocations and of contextual meaning, contiguity of forms as a factor in semantic change (see above, p. 363f.), and the concept of elementary fields as pairs of terms implying each other (cf. p. 373), all belong to syntagmatic rather than paradigmatic semantics. During the last few years, West European semanticists, like their colleagues elsewhere, have become much more emphatic on the need to develop this aspect of their discipline and to integrate it with current trends in syntactic theory.[114] Componential analysis seems to be particularly well suited to throw fresh light on some border-line problems of semantics and syntax, such as e.g. the compatibility or otherwise of terms linked with each other in grammatically well-formed sentences. It has been suggested that 'one way of stating this notion of semantic "compatibility" is to say that the relevant semantic components of the lexical items in the syntagmatic combination generated by the syntax must not be *contradictory*' (Lyons 1968:475). If we take the example of the various types of 'seat' discussed above (p. 376), to speak of a *canapé* for one person, or of a *tabouret* with arms and a back, would be a 'contradiction in terms' because the components of the lexical items involved would be mutually exclusive: it is a distinctive feature of a *canapé* to hold more than one person, and of a *tabouret* not to have either a back or arms. The semantic incongruity of sentences like the famous *Colourless green ideas sleep furiously* could probably be explicated in the same way, and so could certain cases of redundancy; thus, the phrase *un fauteuil à bras* would be tautological in French since one of the semantic components of *fauteuil*, which distinguishes it from *chaise* and *tabouret*, is precisely that it does have arms. In English, this redundancy would take the form of outright repetition: *an arm-chair with arms*; in the English word, the semantic component 'with arms', which is implicit in the French *fauteuil*, is made explicit by morphological motivation. Although it is salutary to remind oneself that 'progress in this area is dependent upon the construction of a more appropriate theory of syntax than is yet available' (Lyons 1968:476), most West European students of structural semantics would agree with Uriel Weinreich: 'If a retreat is to be called to the position "No syntax without semantics", perhaps the realization that there can be no semantics without syntax will compensate for the concessions that appear to be necessary' (1966b:469).

6. CONCLUDING REMARKS

Looking back on the various trends which have shaped the history of West European

[114] See Baldinger 1966:4; Togeby 1965; Weinrich 1965; Pottier 1966; Seiler 1967; Rey 1968:177; Baumgärtner 1966 and Todorov 1966. See also, from outside our area, Abraham and Kiefer 1966. Among somewhat earlier works, see especially Devoto 1952–53 and Perrot 1952–53; cf. also from outside our area, Seidel-Slotty 1943.

semantics since the First World War, and in particular on those which are dominant today, two impressions stand out very clearly. The first of these is the vastly increased popularity of semantic studies during the last two decades or so. In Western Europe, the change was less sudden and less radical than in the United States since the climate had been less hostile to semantics: most European linguists, brought up in a different tradition, had never been quite so worried about 'mentalism', or quite so preoccupied with the requirements of 'scientific rigour', as were their American colleagues in the 1930s and 1940s. Nevertheless, after the great syntheses of the years immediately before 1931, and after the initial momentum of the field theory had spent itself, there was a marked decline in West European semantics, and the period between the mid-thirties and the early fifties was, on the whole, remarkably sterile, especially when compared with the intense activity and experimentation which has since been taking place and which is gathering speed at an almost bewildering rate.

The second impression is closely linked with the first. The semantics which came to maturity in the 1950s and 1960s is, as we have seen, very different from its predecessor. Although traditional problems of historical semantics continue to interest many West European linguists, they have been overshadowed by descriptive, and more particularly by structural, research. It should be noted, on the other hand, that several forms of structural semantics have a diachronic dimension, and this has already begun to revitalize the historical side of semantic studies.

In addition to these two dominant features, there are also several other characteristic trends, some quite general, others peculiar to Western Europe, though by no means confined to this area:

1. In Western Europe as elsewhere, there is at present a revival of interest in linguistic, including semantic, universals. General features and tendencies have been and are being investigated in all the main divisions of semantics, and some work has also been done on semantic typology.

2. Concurrently with this interest in universals, West European scholars have also been trying to discover what is unique and idiosyncratic in the semantic structure of a given linguistic system. Such an approach is fundamental to the field theory; on a broader basis, there has been a notable increase in monographs on the semantics of particular languages: French alone has been the subject of three full-length studies all published within a period of sixteen years (Gamillscheg 1951; Ullmann 1965; Duchá-ček 1967).[115]

3. Recent developments inside and outside semantics have focused attention on relations between this discipline and some of its neighbours. Close liaison, and even interpenetration, between semantics and syntax has become one of the major issues in

[115] Cf. for English semantics the works of G. Stern and H. Koziol and, outside our area, Yamaguchi 1961; cf. also Weisgerber 1962, Struck 1954, and, in the Slavonic field, Apresjan 1967. It should be noted that, as far back as 1913, K. Nyrop had included a volume on semantics in his *Grammaire historique de la langue française*, and that in 1922, N. Bøgholm had published an *Engelsk Betydningslaere*; other early books of this kind were E. Wellander's *Studien zum Bedeutungswandel im Deutschen*, and A. Waag 1921, and, on a more limited scale, Huguet 1934.

linguistics, and there is likely to be rapid progress in this area during the next few years. Relations between semantics and onomasiology and between semantics and stylistics are also being re-examined in the light of recent advances.

4. A leading French structural semanticist declared at a symposium at the end of 1966: '"Pure linguistics" is dead, as a child protected from microbes for two years will die' (Pottier 1968b:40). This is no doubt an exaggeration, but a tendency to move away from a strictly 'immanent' conception of linguistics has certainly been noticeable in Western Europe and elsewhere. Even in its pioneering days, West European semantics had close contacts with philosophy, psychology, and the history of civilisation. 'No more study of words without a study of things' was a famous slogan launched by an early semanticist, founder of the so-called 'Word and Thing' method (see Iordan and Orr 1937:62ff.) and editor of the journal *Wörter und Sachen.* Subsequently, further interdisciplinary contacts were developed: sociology, anthropology, neurology, and other sciences have enriched the study of linguistic meaning with many valuable insights; more recently, new partnerships came into being between semantics and statistics, information and communication theory, computer science, and various other disciplines, not to mention the application of semantic viewpoints to such fields as language teaching, machine translation, and information retrieval.[116] Structural semantics as practised by Greimas has even wider ramifications: through 'semiology', the theory of signs, it links up with a multiplicity of problems as far removed from each other as psychiatric documents, the structure of Russian folktales, and the metaphysical and moral ideas underlying the novels of Bernanos. Few West European semanticists would go to such lengths, but most of them are anxious to foster various forms of cross-fertilization. In this respect, however, there are significant differences between the position in America and in Western Europe. In the latter area, there is — with one or two exceptions[117] — far less contact between linguists and anthropologists than in the United States. West European semanticists are also more inclined to emphasize the humanistic aspects of their subject, and although they have received important impulses from philosophers, the influence of formal and symbolic logic has been less deeply and less widely felt. As a result, structural semantics in Western Europe is — again with certain exceptions[118] — less formalized than its American counterpart. This can create serious problems of communication, but there can be no doubt that the gap has narrowed very considerably during the last few years.

5. This brings us to a final point which is of considerable importance for the future

[116] On these matters, see e.g. the *Actes du Premier Colloque International de Linguistique Appliquée* (1966) and some of the publications of the Cambridge Language Research Unit under Margaret Masterman, such as Sparck Jones 1964. On contacts between semantics and other disciplines, see recently Rosiello 1962.

[117] Such as the influence of Malinowski on J.R. Firth, and quite recently that of Lévi-Strauss on Greimas.

[118] E.g. the works of Baumgärtner, Kühlwein, Lyons, and Seiler, or Baldinger's monograph on *se souvenir;* cf. outside our area, Abraham and Kiefer's *A theory of structural semantics.* For an early attempt to formalize semantics in a glossematic framework, see Holt 1946.

of West European semantics. For the first time in its history, the latter is beginning to feel, on a significant scale, the impact of American research on semantic theory. By a happy coincidence, the emergence of transformational semantics in the United States, and the lively debate which has developed around it, came at a time of greatly improved communications in the academic world. This has introduced an entirely new factor into West European semantics, and its effects are bound to make themselves increasingly felt in the years to come.

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LEXICOLOGY AND LEXICOGRAPHY

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To summarize coherently in a few pages half a century of lexical research covering a group of western European countries and a host of linguistic schools, each differing one from the other, could open the way for a mere catalogue of heterogeneous achievements. Not to disconcert the reader, we have resolutely chosen to sacrifice the less representative works so that we can give more time to the more productive and characteristic aspects of present-day research.[1]

The enormous amount of work done by vocabulary specialists in the various European countries is enough to surprise the American linguist. This is because 20th century European lexicology is a reality whose vitality and diversity cannot be questioned, even if the great mass of work may appear to some to be an illustration of linguistic conservatism which dominates numerous centres of research.

1. INTRODUCTION

Lexicology which has occupied, since the last century, a place which is undoubtedly more important because of its achievements than because of its theoretical views, has made, it is generally agreed, a substantial contribution to the overall knowledge of languages. Since the last World War, it has acquired a new vitality which is seen both in the richness and the variety of research work and in the dynamic nature of the theoretical discussions which accompany it. Whilst it was essentially dominated by the historical current (including the changes suggested by the synchronic description of Wartburg in particular), it found itself opposed, during the last 20 years, to the principles of the formalists and the transformationalists, which were founded on the achronic conception and the negation of the extra-linguistic contingencies. To summarize, it could be thought that European lexicology could be divided today into two branches; the first is exploiting the potential field opened up by the historical lexicologists of yesterday, holding the profound conviction that it must be enriched and made

[1] The trend of our personal work and even more the particular importance that lexicological studies have occupied in France for the last 20 years, have incited us to give them a certain preeminence. However, we hope to have reserved for other European achievements the representative place which they deserve.

more precise by a more rigorous definition of methods and the expansion of fields of inquiry; the other is studying a reduced corpus of abstract models which might be able to show the structures and the function of lexical units and which aims at considering the analysis of vocabulary as a part of the analysis of verbal performance.

In practice, more and more numerous conciliatory tendencies for establishing patterns are evident between the two choices because it would appear to many that the two approaches are complementary. In a different way, recent works have put these beliefs into practice. For K. Baldinger, S. Ullmann, R.-L. Wagner, E. Coseriu or P. Guiraud it is a question not of reconciling them but of bringing them closer together. To the first can be opposed the postulates and the methods of structuralism. The necessity of having recourse to history can be brought to the attention of the second.

This is as near as can be the opinion of the great majority of contemporary lexicologists who consider with prudence a discipline which still appears to them to be very fragile. The conclusions of certain contemporary linguistic trends have led them not to break entirely with past achievements: do not these conclusions deny the existence of an autonomous discipline of lexicology (Hjelmslev, Guillaume)? Have not the structuralist or functionalist theories eliminated vocabulary from methods of analysis of limited sets which had succeeded so well in phonology and morphology (Martinet)? Modern lexicology will not however be able to refuse the mass of lexical facts. By defending the principles of its specificity it hopes to proceed today with its own development. This means that it would like to include in its own methods everything which has been useful and successful in other fields, at the same time justifying with as much energy as circumspection its autonomy and hence the soundness of its base.

Most of the remarks by U. Weinreich (1963) explaining the situation of lexical studies in the Soviet Union could just about be extended to the whole European continent. The same experiments have been tried in the west to avoid the inexact and dangerous division between the philologists who are interested in the facts and the linguists who limit themselves to ideas. The lexicologists who have contributed something new, particularly over the last 10 years, are still those who have a background of detailed historical studies of many languages. It can be understood that their efforts tend more towards a synthetic acquisition of everything concerned with language rather than towards a doctrinal opposition of belonging to one school or another. This would be neither positive nor profitable in the present state of research requirements. However, university teaching perpetuates this tendency by giving a major if not exclusive place in nearly all European countries to the philological, historical and literary aspects. The spreading of new concepts often comes after a traditional education. A few years ago, it generally only reached the students who were doing postgraduate work and then it was nearly always based on their previous training.

Without knowledge in all the European countries of the details and the development of linguistic studies in the Soviet Union, it is certain that Western European countries give an important place to the various disciplines which are linked to the

study of words and vocabulary. There is a definite difference between the status which is given to these studies in the linguistic field on the other side of the Atlantic where the usual textbooks forget to mention their existence. This comes from the fact that European linguistics, based upon a historical, sociological and psychological tradition, is linked to the semantic or at least the formal aspect of language. Thus European linguists thought they could not leave aside the study of words which were at the heart of these problems (see, for example, the diagram of linguistics suggested by Ullmann 1957b:39; see also below).

The reasons for the lasting success of lexicological studies in Europe are attributable to more specific causes. Amongst the most important of these are, firstly, the lexicographical programmes which are in progress at the present time. Never have these programmes been so ambitious. The desire almost everywhere for great historical dictionaries has brought into the field both research workers and considerably developed material means. At the same time monolingual or plurilingual general or specific lexicographic productions have not ceased to increase in number and diversity. Likewise dialectological studies and the preparation of linguistic atlases have reinforced a growing interest in vocabulary because the making of these atlases tends to be confused with the preparation of vocabulary repertories of a particular type. With the introduction of lexical semantics at the end of the last century (logicism) and its renewal between 1910 and 1920 (sociologism and psychologicism) there developed a considerable interest in the study of words. In particular, it left its mark on the new trends in contemporary etymology, often confused with the history of words. There are many illustrious examples of this type of study. In the same way, the very nature of vocabulary facts, at the frontier of the system and the extralinguistic realities have been attracting more and more the curiosity of many non-linguist specialists. This is why, in order to survey the essential works in European lexicology, it is necessary first to take into account the important part played by the literary inspired works dealing with the vocabulary of particular authors (they occupied a very important place in STYLISTIC research during 1930–50), and recently, the part played by the historic and sociological works which often used vocabulary data as a vital part of their research. This latter branch seems to be on the verge of receiving a new impetus.

2. THE AIMS OF LEXICOLOGY

European lexicology has only recently become conscious of its own existence, its aims, methods and the place that it could consequently occupy in the fields of language sciences, and it can still be maintained that it is evolving rapidly, whereas vocabulary studies go back to the very first reflections on and about language. For more than a century, lexicology was confused with lexicography which was considered as a technique aiming at making lists of lexical items, defining them, classifying their use and even recounting their history. Despite its long background it was not until less than

20 years ago that lexicology took on a clearly distinctive form.[2] However it would be unwise to maintain that this distinction is in the mind of all linguists.

It is undeniable that a catalogue of the traditional lexicological achievements (often very important) illustrates more the vitality of the research covering 'words' and 'vocabulary' in general, than that it proves the existence of a clearly defined object and a body of doctrine on which these works are based. The European lexicologists' works have largely preceded the appearance of a coherent lexicological discipline which could be considered as a branch of modern linguistics.[3] Their uncontested utility (to start with dictionaries) has only too often been their methodological justification. But it can be assumed that things are going to change rapidly, if the autonomy of vocabulary is not radically questioned in the near future. Many important theoretical works with their corresponding practical applications, which have been based on postulates of contemporary linguistics, have been published over the last few years. It is hoped that, with the help of teams of young lexicologists whose task appears to be as difficult as enviable, these works will be able to serve as a basis for future lexicology.

A first trend — which we could call traditional — gives vocabulary a rather well defined role which is generally recognized by all historical works. Besides the most general opinion expressed by British linguists that grammar deals with the general facts of language (Sweet 1931) or that 'Lexicology is the study of open classes while grammar is the study of closed classes' (Halliday 1961) it has generally been admitted, since the end of the last century (Jespersen), that vocabulary does not include only the 'particular' (the dictionary), but that it also covers in part the 'general' (grammar) through the elements of word formation. For Ries, LEXICOLOGY (Wortlehre), is opposed to SYNTAX while MORPHOLOGY (Formenlehre) goes hand in hand with SEMANTICS. Thus, lexicology, as well as syntax, comprises a morphological and a semantical aspect. These theories have again been taken up recently by Ullmann in his general scheme of linguistics where lexicology is divided into two branches: LEXICAL MORPHOLOGY and LEXICAL SEMANTICS (1957b). This concept based on the duality of aspects still proves itself by the practical advantages it offers for didactic uses (cf. for example, Mitterand 1968).

The distribution of language items between VOCABULARY and SYNTAX has very often been a matter of long discussions over the last two decades. But as the arbitrary

[2] An attempt at clarification of these two notions used by European linguistics is to be found in Tollenaere 1963b:9–14. These two terms had been confused by J. Marouzeau, *Lexique de terminologie linguistique* (since 1933) until the reedition of 1951 where he clearly stated: 'Sometimes, the name *lexicology* is given to the study of vocabulary and that of *lexicography* to the science of dictionary making'. Marouzeau was followed by S. Ullmann, *Précis de sémantique française* (1965:33, n. 2): 'Must the specialization in the use of these two terms, that were formerly equivalent, be attributed to the particularly important development in vocabulary studies? It does not appear that the distinction has been so clearly made in other European languages with perhaps the exception of Spanish' (cf. Casares 1950).

[3] This allowed G. Matoré to write (1953:9): 'In France, until recently, lexicology did not exist, but only lexicologists.'

character of the morpheme distribution, which has been so often underlined,[4] did not offer a real theoretical solution, this distinction still remains in use in the overall descriptions. It still remains in force today because of the practical advantage that it offers for simplification compared with the various theories which have inspired much of the European linguistics of today. Some European linguists, refuting grammatical divisions, have suggested a new method of grasping the lexical units, as for example for the glossematists: 'These disciplines (morphology, syntax, word formation, lexicon, semantics) should not be substituted in such a way as to make independent categories because, on the contrary, they are closely linked and mutually based. In all these disciplines, it is a question of one single thing: the behaviour of morphemes. The changes concern either the dimensions of the syntaxical unit in question: the simple word (morphology), the word in its extension, derived or compound (word formation), groupings of words, clauses or sentences (syntax), or the morpheme categories considered: as flexional or derivative morphemes, the pronouns and the prepositions (grammar) or the nominal and verbal morphemes (vocabulary and semantics)' (Togeby 1965).

To the best of our knowledge, these theories have only been applied to specific studies with a morphological bias (cf. for example, Heltberg 1967).

In the following pages, we mean by LEXICOLOGICAL RESEARCH all the studies which have been made over the last 50 years and which have had as their objective the study of lexical units, their nature, their formation, their structures, their usage, their transformations, and the relations that they have with the extra-linguistic universe which they denote through the image that men make of them.

3. THE LEXICOLOGICAL PHENOMENA AND DESCRIPTIVE LEXICOLOGY

3.1 *The Word and the Lexical Unit*

The anthology of definitions of the WORD collected formerly and kept up to date by A. Rosetti (1947a-b, 1965:261–2, 1966) will give quite a clear idea of the controversies which have divided European linguists as much on the nature as on the identification of the lexical unit.[5] Besides the older pragmatic definitions derived from traditional lexicographic procedures (the *word* is the heading of a dictionary entry), the functional analysis-data operating in such and such a perspective have suggested quite different phonological (and phonetic), morphological, semantic and psychological interpretations. We will not go back to the difficulties encountered in the various

[4] Morphemes which change the base meaning of the 'semantemes' belong to vocabulary (word formation etc.), the others (declensions and conjugations) belong to syntax: but what criteria can be used which are not purely subjective to be able to say there has or there has not been a change in the base meaning (Perrot 1952–53:68)?

[5] See also for a more general view: Penttilä and Saarnio 1934; Laziczius 1945; Togeby 1949; Hiorth 1958; Bolinger 1963; Benveniste 1954; Martinet 1966; Buyssens 1967.

approaches for determining the autonomy of a word. Must it be translated by a single term (*main*)? Or must it include the morphemes (*la main*)? According to the linguistic behaviour of certain units should not the complete nominal or verbal syntagmatic unit be adopted (*donner la main* de quelqu'un)? The problem of the *word* and more or less stable groupings of words of which it forms a part is far from being settled and the discussion remains open on this point.[6] As no theoretical solution has been found, the lexicologist can either accept intuitively a concept of the *word* or *lexical unit*,[7] or create (or adopt) an operational definition which can be justified by its success in particular works.[8] Thus for example in lexicostatistics, G. Herdan, like Zipf had only taken the written form into consideration in dealing with the English 'words' (groupings of letters between two spaces). However for French with its complex system of inflexions, research workers were obliged to elaborate a more complex typology.[9] In much the same way, work on a vocabulary that is taking shape would clearly mark the limits between a *word* and a *group of words* which was on the verge of becoming lexicalized. Thus the operational criteria of the UNITY OF SENSE[10] could thus be substituted for the *word* or the lexical unit.

As they have borrowed the essential part of their first information from dictionaries, the lexicologists have most often turned, as recently as the last few years, to the defining limits which were traditionally used. Thus in their procedures, formal and semantic criteria of lexicalization are closely linked in such a way that through intuitive or pragmatic practices they meet the basic requirements of the definition of the unit such as it has become common practice in the linguistics of the 20th century, i.e. a unity made from the indivisible association of the *signifiant* (name) and of a *signifié* (sense or reference). (All the linguistic schools are agreed on the postulate when they quote Gardiner, Saussure, Meillet or Hjelmslev, even the Aristotelian definition of the name.) This is an intuitive convergence because when lexicologists come up against

[6] The reader is referred in particular to the general bibliography collected by Ullmann (1957b) which comments pp. 47–64 upon the main perspectives.

[7] For example, as E. Coseriu did in 1964:142, where he accepted this solution more easily; according to him difficulties concern more especially GRAMMATICAL ITEMS than LEXICAL ITEMS.

[8] Although Martinet's terminology (*monème, lexème, morphème*) is used by certain French lexicologists in their recent works, R.-L. Wagner (1967:43–5) maintains that it is not very suitable for use in lexicology. Cf. the definition of *lexie*, proposed for replacing or being associated with *lexème* in Pottier (1962a:63–91).

[9] Guiraud (1954a:19) has noted four possible methods: 1. the word as a lexical unit; 2. the word as a sense unit; 3. the word as a formal unit ('graphophonic'); 4. the word as a sense and form unit. Ch. Muller (1963) only distinguished the TEXT WORDS (based on the form of the statement) from the LEXICAL WORDS (after solving the many morpho-semantic, polysemous, homonymous and derivational problems).

[10] These UNITS OF MEANING can be simple words or syntagms of varying length. UNITY OF MEANING has been preferred to LEXICAL UNITS because the problem in hand is the method of naming (inventory of the selected procedures for expressing the concrete things which have been experienced or thought) (cf. L. Guilbert 1965). We have not given a special place to the problem of PHRASEOLOGY in that it has been the subject of very few studies in western Europe compared with the works done by Soviet linguists. However we would like to mention Dimitriescu's (1957) and Greimas' (1960) attempts at linguistic definitions.

such delicate problems, their science is unable to offer a solution. The tendency to give the *signifié* a predominant value to solve the difficult examples can only be considered acceptable when an objective definition of it can be given. This is not yet the case[11] and the difficulties raised by the problem of polysemy and homonymy which will be dealt with later on, will give, if need be, conclusive proof. To remedy this, contemporary lexicologists thought they had found in the linguistic criteria of functional output adopted by descriptive linguistics a more certain method (permutation in the same phrase or syntagm with other terms belonging to the same morphological or semantic class and the possibility of forming new words from this eventual unity).[12] We will see the use which has been made of this in lexicography.

An essential point remains and will serve as a methodological basis for all lexicological works: it is the identification of the LEXICAL UNIT with a complete linguistic SIGN for which the 'consubstantiality' of the name (*significant*) and the sense (*signifié*) will not be questioned, even if its determination appears delicate.[13] On this point, it has been admitted that the narrowest relationships unite the two sides of the lexical sign; P. Guiraud has recently called these LEXICOLOGICAL LAWS. They conform to a definite type for each word and it will be possible by using them as a base to form 'paradigms' in which a series of words formed on the same model will be included. One of the most urgent tasks of contemporary lexicology is to try and define them (see i.a. Guiraud 1967).

3.2 *Lexical Morphology*

Phonology and grammar are the essential component parts. Over the last 20 years, the analysis of the distribution rules of phonemes in word-construction as well as the study of values, which are linked to their phonemic structure, has often been associated with phonetic, psycho-acoustic and psycholinguistic research. The increased development of these studies tended towards a mathematical exploitation which goes far beyond so-called lexicological studies. It has brought with it a considerable contribution to the study of the phonological variations of derivation and to the study of the basis of acoustical motivation of the lexicon.[14]

[11] See for example the difficulties brought up by a vast linguistic inquiry, by Phal 1964; Frei (1929: 88) has already given an experimental sketch of this problem.

[12] See in particular J. Dubois 1964a who applies distributional theory and unit theory (théorie des ensembles) to the description of lexical items, and also Dubois 1960. Today transformational methods are being diffused to show the relationships between nominal and verbal syntagms, nouns and adjectives, and to define the combinations of the constituent parts. Cf. Dubois 1966a. It can be understood how these approaches link present-day descriptive lexicology (synchronic) to general linguistics. See among others M. Coyaud 1965, Dubois et al. 1965.

[13] It must be admitted that on this point lexicology has also pushed aside the theory of the arbitrariness of the sign which preoccupied linguists so much between 1920 and 1940. Cf. bibl. in Ullmann 1957b etc.

[14] A number of statistical works have been done in Rumania, cf. Roceric 1962, 1967; Sala 1962; Golopenţia 1966; Vasiliu 1959; see also: Marchand 1959; U. Jacobson 1962; Ellenberg 1964.

As we previously mentioned, some important problems included in the field of lexicology depend on what is commonly called GRAMMAR OF WORDS or GRAMMAR OF THE LEXICON. It concerns all that involves the very few stable elements which every language uses for the construction of words. Then the task of lexical morphology is to define which general elements contribute to that construction and on which economic principles they are based. During the first 25 years of this century, the inventories of works have multiplied. They were constructed from various BASE WORDS or RADICALS which allowed the definition of tables of prefixes or suffixes and hence, the main types of composition. Rather than complete these lists, the following research tried to bring out the derivational systems which the methodological postulates of contemporary linguistics supported.[15]

It can be noticed that PREFIXATION and composition have not held the attention in the same way as other linguistic phenomena have. The relatively clear definition of prefixes, their weak phonic variations, the stability of their semantic contact, except for minor variations in usage, have given birth to fewer new research works. Nevertheless, we would like to point out the work done by Peter in analyzing the negation field (1949) and especially that of Guilbert and Dubois (1960) in bringing out the system of intensive prefixes in French (cf. Peytard 1964; Rey 1968). Today, the nominal composition is the best known, but the analysis of the items dealt with has still not been completely established (Grieve-Schumacher 1960; Benveniste 1966b. See also Thun 1963). SUFFIXATION has been of more interest to research workers. It also poses more problems in that the suffixes are more difficult to define and have combinatory variants which can differently influence their value, and that they often bring about important phonological modifications to the base itself. The specialists have shown this in a very remarkable way by using very different methodological procedures. Some works worth quoting are those of the Swedish research worker B. Hasselrot on the diminutives in Romance languages (1957) and those, of a more fundamental nature, of the German linguist H. Marchand[16] on the morphology of English and French (1951, 1953–54). J. Dubois observed in a work of great import that the suffixed word in French is more easily autonomous than the prefixed one, and that it loses its etymological motivation more quickly. Its use often differs from that of the original word and, what is more important, a general theory of suffixation can be derived. In its procedure this theory will be parallel to the laws of complements which govern the phonemes (Dubois 1962; see also Dănilă 1959; Söll 1968).

3.3 *Lexical Semantics*

The number of studies devoted to the sense (*signifié*) aspect of lexical units is not

[15] The following authors used as a base very different theoretical principles: Baldinger 1950; Marchand 1955, 1960; Dubois and Guilbert 1961; Wagner 1961; Weber 1963; Fischer 1962; Ivănescu 1965.

[16] Marchand was also interested in unmarked derivation, cf. 1964. See also the important articles by Burger 1961 and Wandruszka 1966.

surprising when one recalls that, for a long time, what was called LEXICAL SEMANTICS was the essential field of historic semantic research between 1920 and 1940. Even today are not lexicology and semantics deliberately confused by certain authors?[17] Most of the traditional lexical studies give emphasis to the analysis of meaning, either directly naming it as the very object of their research or considering meaning as the definitional criterion of the items of the vocabulary. The richness of western literature on this subject is a proof of its vitality.

The SENSE (*signifié* or *reference*) of the words as Saussure had established it in agreement with the usual practice of his time is, for a considerable number of present-day authors, confused with a 'notional' or 'conceptual' fact. It is not the task of lexicology to discuss the theoretical basis of the relations which link this with the thing (*referent*) or with the name (*signifiant*). When we deal with the developments in general semantics, we will refer to the examination of the numerous controversies which are continuing today on this subject. It is of interest to note that since 1950 many lexicologists have taken an active part in this examination because it questions one of the very basic tenets of their discipline.[18]

An analysis of the procedures for determining the 'meaning' of words,[19] which has been in use for half a century, reveals that in Europe today the traditional procedures are ahead of the most modern one. If all the published lexical studies are taken into consideration, the approximate nature of the terms still used by lexicologists is sufficient to amply confirm it.

If for about 10 years, the functional or relational determination of meaning has seen an increasing number of applications, the lexicographical type of DEFINITION is still the most frequently used procedure. Its limits, nevertheless, are the subject of concern for the specialists who are very conscious of their imperfections and the improvement of these definition procedures is one of the themes dealt with more and more often by the linguists, as well as by the lexicologists themselves. We will return later (see 6.322) to an account of the efforts made over the last few years by the semanticists and by the lexicographers to improve future dictionaries through efficient cooperation. The present-day results appear to offer cause for optimism because of the fact that the object of LEXICOGRAPHICAL DEFINITION no longer seems to be confused with that of

[17] We will not develop these general problems which are examined in detail in Ullmann (this volume). More and more well-defined criteria are quoted today to distinguish these two disciplines. This comes from the developments of modern semantics itself (*semiologie*) to the extent that the *semes* (content unities) cannot be confused with any type of lexical element which all imply the association of form and content.

[18] Since 1950, the works of Baldinger (and in particular 1964), Ullmann 1962, Heger 1965, Coseriu 1964, have reiterated (with criticisms and Saussurian interpretations) the fundamental work of Ogden and Richards, *The meaning of meaning* (1923, 10th ed. 1960).

[19] MEANING, generally taken for both SENSE and MEANING is also currently used to mean MEANING and SUBMEANING. However, the problem is very important. Cf. Ullmann 1956, Funke 1954, Henzen 1954, Nehring 1963. L. Hirshberg (1966) has made a diagram of the objects meant by meaning and its pseudo-synonyms in *APCILA*, p. 42. Heger (1965:10–14) has summarized the most recent discussions on this matter.

total semantic analysis. The lexicographical definition continues to defy all attempts at classification and still has an aspect which remains an irreducible approximation (cf. Greimas 1966:74). But the debate is far from being closed and the most recent works try to bring out, by a more detailed analysis of the logical procedures, a semic equation which remains the key to all work on definition (cf. for example, Rey-Debove 1961).

3.31

The ANALYSIS OF MEANING (*signifié*) was carried out according to the two tendencies current in European lexicology today.

The first believes that it is possible to comprehend meaning through various semantic approaches and is especially represented by Romance and Germanic lexicology. After listing the various types of GRAMMATICAL, LEXICAL and STYLISTICAL meanings,[20] it has become attached to the recognition of FORMAL SENSE, essentially potential, through the INDIVIDUAL meanings which have become actualized.[21] It is difficult to say what advantages these practical applications have really taken from this postulate because most of the descriptions are still dominated by imprecision. The distinction between INTELLECTUAL and AFFECTIVE functions recognized in the words has offered a richer field for development. Bally gave much importance to this distinction which has been reinforced by increased research on LEXICAL MOTIVATION[22] of which specialists have extended the scope, whether it be only limited to the NAME (Ullmann, Porzig), or extended to cover the association of SENSE (Bally). The pair DENOTATION/CONNOTATION borrowed from American linguistics about 15 years ago is currently used for describing the two aspects of Saussure's meaning (*signifié*). (Mounin 1963:144–68 has given a historical account of these aspects in Europe and the United States.) Many attempts at a more delicate analysis have been made over the last 10 years. They have been based on the methods of contemporary descriptive semantics. The efforts to find the smallest units of meaning, suggested by Hjelmslev or Prieto, have already revealed the importance that they could have for lexical research in general and that of lexicography in particular. B. Pottier, after having catalogued the *semes* and the *virtuemes* from which all lexical meaning is formed, suggested distinguishing operational *seme-*

[20] The acknowledged divisions of Anglo-Saxon linguistics will be opposed to this lexicology. Amongst the more recent distinctions will be noted the division between FORMAL and CONTEXTUAL meanings suggested by Halliday (1961). The FORMAL SENSE includes the combinatory (purely syntaxical) structures, those which can be characterized by the categorical semantic laws, and the data marked by form at all the semantic levels. The CONTEXTUAL SENSE is the relationship of a word with the extra-linguistic data, i.e. the context in which the text is spoken or written. Cf. Hirschberg 1966: 49–50.

[21] The reader is referred to Ullmann (1957b:65–98). Malmberg 1966:184–6 reminds us that the Swede A. Noreen (*Vårt språk*) already distinguished about 1910 the OCCASIONAL and USUAL meanings, usual meaning representing the INVARIABLES, the other representing the VARIABLES, using present-day terminology.

[22] Cf. in particular Bally 1932; Benveniste 1939; Bertoldi 1946b; Orr 1944; Pos 1948; Ullmann 1949; Marchand 1957. In Ullmann, a bibliography on the discussions of the arbitrariness of the sign is to be found. See also Engler 1962.

mes, *classemes*, *archisememes* in dictionary definitions (1964, 1965). I. Evseev developed for Rumanian a method of semantic characterization based on similar data, 'marcsemes' (semantic marks). He established the existence of a semantic space of one or more languages conceived as a network of a finite set of distinctive features. Thus every word appears as a complex unit whose structure represented the combination of certain marcsemes. The application of such a semantic net to lexicography and to semantics is naturally very attractive. Evseev (1967) suggested a trial application to Rumanian and made an inventory of the marcsemes necessary for determining 45 words. Using another method, H. Sørensen multiplied the regressive analysis in which the particular terms were replaced by the total of the more general terms which covered them. Thus he arrived at terms which are not able to be treated by the same means and which he called irreducible '*primitives*'. The number of these is obviously limited.[23]

3.312 The second tendency rejected the possibility, accepted by previous works, of grasping the meanings themselves. The meanings can only be examined when the words are placed in a context which actualized them and gives them, for this single moment only, a certain value. This method has been illustrated in Europe by English linguistics in particular. L. Wittgenstein and J. Firth have added some theoretical groundwork to this method. It identifies meaning with the use which is made of a word in a given language, i.e. the 'sense' results from the complete range of its uses (Wittgenstein 1953). And in this case, the meaning of a word can be determined by experimental processes, such as the substitution tests used in the linguistic inquiries of Quirk (1958) or T. Slama-Cazacu.[24] It is known that this point of view attracted some early supporters in American linguistics (cf. for example Chase 1938 and Wells 1954), and some recent British works remind us of its present-day use. As still recently J. Lyons said: 'Meaning is a matter of the relations contracted in a context by one formal unit with other formal units' (1963:28, 57). This point of view has been brilliantly applied in French to various types of problems by J. Dubois (see Bibliography). But this operational concept of 'sense' (also called DISTRIBUTIONAL by some) has within itself its own weaknesses on the practical level. Thus defined, the analysis of meaning cannot limit itself to listing the various collocations. It must go back to wider contexts, to situations, to history and there it will find a multitude of VARIABLES which are difficult to grasp.

Some linguists have tried to show the complementary nature of these two approaches (Ullmann 1956; see also Slama-Cazacu 1961:207–23). It is true that it has already been applied by lexicographers who were unaware of the theoretical data. The simple

[23] 'Even if the task of surveying the "primitives" in an ordinary language is really difficult, it is a task which is absolutely necessary because the development of lexicography as a systematic science depends upon it' (Sørensen 1958:46–7).

[24] See also in a similar vein Sinclair 1966, who was looking for the absolute sense through contextualization, and Ellis 1965.

intellectual exercise of the man on the job led them, after accumulating quotations, to find the common denominator so that they could bring out the 'main meaning' or 'proper meaning'. In the same way, by analyzing the different variables, the lexicographers have succeeded in making, with more or less subtlety, a description of the different uses. It is also currently applied in many descriptive lexicological works with a sociological bias.[25]

3.3.2

The POLYSEMIC PHENOMENON stems directly from the two main forms of lexical semantic preoccupations. The former is more traditional, it is a question of how to define and organize the various meanings of a word, and the stylistic values are excluded in this case. The latter which has been the most frequently discussed since 1960 ends in a reappraisal of the functioning and the resolving of the phenomenon itself, compared with that of HOMONYMY and HOMONYMIC CLASHES (see Ch. Muller 1962a; Heger 1963; Schauwecker 1968).

The assigning of many meanings to a single form was previously the main method used in lexical descriptions. The specialists were quite aware of the reality of the polysemic facts as far as the synchronic aspect was concerned, but it was not until recently, when dealing with diachrony, that they tried to explain it. It not polysemy one of the consequences of time-honoured language practices? The need to have recourse to history and 'logical laws' of language evolution was justified by this observation. Thus the lexicographers and rhetoricians classified the various meanings (or 'figures') of a word according to two aspects which often were complementary: PRIMITIVE or ETYMOLOGICAL meaning / DERIVED meaning, or PROPER meaning / FIGURATIVE meaning. These methods have not yet disappeared from the (traditional) descriptions which are being presented today, but a new interest is being shown in the analysis of POLYSEMIC PROCEDURES, i.e. the analysis of causes and of linguistic, or extra-linguistic, ways giving shape to the phenomena (cf. Rudskruger 1952). Thus, the discovery of uses which preceded those on which a so-called sense derivation and the discussion of 'logical' relationships between meanings were based, led to the reversal of a great number of former classifications; just as the history of words — a modern version of etymology — contributed to the splitting up of older polysemic groupings attached to the same form.

It was in dealing with the organization of the meanings of a polysemic word in a synchronic dictionary that structural methods were applied to the structure of polysemy. Sommerfelt and Knudsen had suggested using syntaxic indices in order to distinguish primary and secondary meanings. But the five procedures that they suggested in 1958 have not been entirely satisfactory especially in the case of extended polysemy.[26] Taken up later, the categoric application of such procedures led to the

[25] 'Every word has a meaning field whose centre, the base is made by the concept of a material or social reality. The nature of this concept is determined by social usage' (Hollyman 1957:13).

[26] See *Proceedings of the VIIIth International Congress of Linguists* (1958). Some of the latter were taken up by Kuryłowicz who had suggested them in 1951.

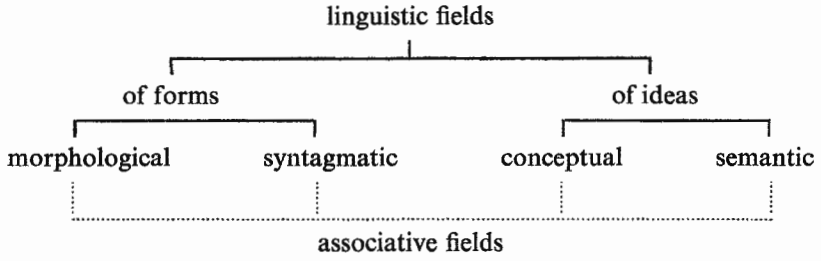
disappearance of the polysemic phenomena themselves in that the authors tried to make from each sense, which had a different distribution and a different syntaxic behaviour, an individual unit. It was in this way that the analysis undertaken by J. Dubois and his team, based on the syntagmatic status of words, led to the systematic subdivision of traditional usage dictionary entries (see 6.322). The demands of mechano-linguistics have resulted in a similar application (Gentilhomme and Tabory 1960; discussed by Gougenheim and Michea 1961; Lebrun 1962). They led to the differentiation of meaning according to the syntaxic behaviour of the 'form' only. From this point of view, the distinction between HOMONYMS and POLYSEMANTEMES lost its pertinence whereas it can still be maintained on the diachronic level. It is for this reason that the distinction was suggested between two FORMAL POLYSEMIES (syntagmatic and paradigmatic), whose differentiation can be based on formal rules, and NATURAL POLYSEMY (textual or situational polysemy) which is much more difficult to determine. For the former, J. Dubois (1966c) suggested applying the general principles of the structuralization of the sentence.

3.4 *The Organization of Vocabulary: Lexical Structures*[27]

The principles, on which the solidarity and the interdependance of all the elements of language are based, had largely penetrated lexical studies before 1925. It is known that for a very long time grammarians used various systematic groupings taken from the immensity of vocabulary facts (families of words, synonyms and antonyms, analogical or ideological series etc....). Current use of language makes these evident. The theoretical postulate of Saussure (1949:174) on the 'INTERANIMATION OF THE LEXICON' and that of Ch. Bally (1940a) on the ASSOCIATIVE FIELD, have done nothing else but introduce the rigour which was previously missing in most empirical theories. It was a question of finding a postulate on which everybody was agreed and which could be used in many later works (cf. amongst the general studies, Ullmann 1957b; Scheiweller 1942; Gabka 1956; Ducháček 1960, 1965b; Mounin 1962). For the lexicologist of today, the inventory of the various networks of formal and semantic associations (lexicological fields) which reach out from a word, allows its objective identification within the limits of functional description. The lexicologist can also establish on what relationships the causes which influence the evolution of that word or help with its substitution, can be based. It is only for convenience that the morphological and semantic aspects are generally kept apart. Here, as in everything else that comes from vocabulary, they need to be examined at the same time. The MORPHO-SEMANTIC FIELDS of P. Guiraud (1956, 1961, 1966) are one of the best demonstrations which have been

[27] 'By structure it is meant, particularly in Europe, the arrangement of a whole in parts and the obtained solidarity of the parts of the whole which affect each other; for the great majority of American linguists, this will be the distribution of the parts as it can be ascertained and their capacity for association and substitution' (Benveniste 1966c:9).

provided over the last few years (see also Orr 1953). But both aspects are far from having undergone the same development over the last half century. The diagram that O. Ducháček made (1960:297–322) to summarize the various types of linguistic fields in which all lexical unities are included will give a general idea of the conclusions that can be drawn from a rich literature which covers the last forty years:



3.41 *Morphological structures*

These structures associate words having the same form, homographs, homophones, paronyms, words formed from the same radical with the same affixes, etc. ...

Better defined but hardly better known in detail than the others, morphological structures represent a field where lexicological descriptions have always distinguished series: prefixes, suffixes, types of word composition. The various paradigms which regroup each series are being implicitly accepted by all users and in this way they illustrate the more usual manner of recognizing the notion of 'structure'.

Besides those rare detailed monographs quoted above, most of the European languages are still waiting for exhaustive inventories of all the derivational words listed under the different affixes, dated and defined from the point of view of meaning, stylistic usage, origin etc. ... Recent works call out for this type of treatment.[28] However, it is only from this basic data that the study of the AFFIXAL SYSTEMS can be known, as some remarkable illustrations have already proved (see in particular Benveniste 1966c).

3.42 *Homonymy and polysemy*

Of all the types of lexical relationships, homonymy was the one which most retained the specialist's attention during the first half of this century (Ullmann 1957b:125–38

[28] We accept the most currently admitted presentation. Other theories have recently been put forward. Coseriu (1966) recognized for example three lexical structures (expression alone, expression and content and content alone). Concerning content alone, he distinguishes five types of structures: OPPOSITIONAL (based on the paradigmatic theory of the language, bringing together the LEXICAL FIELD, the MODIFICATION and the DEVELOPMENT) and RELATIONAL (syntagmatic theory of vocabulary, with the DERIVATION and the solidarity). Baldinger (1964:256) distinguishes a double-levelled structure of vocabulary, two MICRO-SYSTEMS (onomasiological field of names and a semasiological field of meaning) and two MACRO-SYSTEMS (phonic resemblance according to expression and the structure of content). Whereas Ducháček (1960) believed that the exploration of morphological fields did not seem to offer much potential, Guiraud gave some examples of the work to be done in French (1967:9).

and biblio.), to such a degree that some thought it could become a branch in its own right within the field of general lexicological research, as Bally (1932:172–7) suggested: Orr has entitled a special paper (1939) "Homonymics".

The success it achieved in explaining semantic evolution within the studies of structural etymology, largely contributed to its coming to the fore (determination of homonymic slashes, conflicts of homonyms, word-obsolescence).[29] In a recent and fundamental study, E. Buyssens (1965:78–86) recalled that homonymy, which had been much too often confused with the so-called popular etymology (or paronymical attraction), needed to be given its rightful place (see also Gougenheim 1961).

The very nature of homonymy has motivated in part the methodological works of which it was the object. Contrary to synonymic analysis, which is always of an approximate value, it was thought that homonymical series could bring forth more stable and rigorous elements capable of determining the type, the nature, and the degree of homonymy. Nevertheless, linguists have never been unanimous on the methods of interpretation and numerous discussions have divided the specialists, according to their attitude which was either historical or synchronical. Recently, O. Ducháček (1962) proposed a compromise typology which makes an inventory (not without risks) of the various homonyms and envisages the transfers (HOMONYMIZATION of meanings and DE-HOMONYMIZATION by contamination) according to both the diachronic and synchronic approaches.[30]

But, while for the last 20 years, linguists have been trying to make inventories of lexical items according to modern linguistic methods, it has been rather the limits between homonymy and polysemy which have retained their attention. New attempts have been made to determine whether it was a question of two different words or of only two meanings of the same word. Some research workers wanted to remedy the lack of semantic criteria by using formal elements capable of bringing more objective data: various grammatical series, prefixation and derivation (Godel 1948), morphological or syntaxical criteria (Diaconesco 1959). Heger (1963) has given the most recent (and the most precise) summary of the question (see also Dubois 1966c), but for many authors, this approach is not sufficient and cannot solve all the various problems involved (see in particular Frei 1961, Ullmann 1965:61). Ch. Muller (1962a) shares R. Godel's (1948) pessimistic view: 'To the question: identity or homonymy? it is not certain that a detailed answer could be given in each particular case. It can just be concluded that in a given language, it is impossible to count the exact number of monemes.' It can be pointed out that recent psycholinguistic research (of the type of

[29] To the well known works of Gilliéron can be added in particular J. Orr 1944. See also Öhmann 1934. For more recent applications see DuPont 1951, 1953, 1954; Burger 1958, Rothwell 1962.

[30] Ducháček (1962) has made a first inventory for French opposing 'real' ETYMOLOGICAL HOMONYMS and 'apparent' SEMANTIC HOMONYMS, then a second one making a distinction between LEXICAL, GRAMMATICAL, LEXICOGRAMMATICAL and MORPHOLOGICAL homonyms. Each of these categories of the 2nd group opposes the ABSOLUTE (homographs) and the PARTIAL (non-homographs).

survey thought out by Weinreich) has brought new perspectives which give a better understanding of homonymy in its synchronic functioning (see for example Slama-Cazacu 1966).

3.43

The SYNTAGMATIC STRUCTURES are very often questioned in the lexical descriptions which are made today. It is true that W. Porzig had already pointed this out in 1934 (:70–97) using the term SYNTAXIC FIELDS with the idea of completing the NOTIONAL FIELDS in the definition of semantic values. They are becoming more and more a subject of study in works which are trying to find in contextual or distributional data the foundations for the understanding of sense (see 3.312). They can be associated with other elements being evaluated as was done by K. Baldinger (1954a) in his syntactico-semantic analysis of the expression of a concept and by Rosengren (1966) with a complementary quantitative approach, or considered alone, as was done by Krimonosov (1963) treating a contemporary German word, or by Lyons (1963) in his study of ancient Greek vocabulary.[31] The systematic study of the formal pressures of the vocabulary which has become one of the principal objects of present-day descriptive lexicology, has inspired many projects for exhaustive inventories of SYNTAGMATIC FIELDS.[32] Some have come from the needs of automatic translation which require vast contextual compilations[33] whereas others, more rigorously defined, are made with a view to renewing lexicographical (see 6.321–2) or pedagogical (Quirk 1958; Pottier 1965) applications.

3.44

SEMANTIC STRUCTURES are those which have been most often examined since the beginning of the century. They are also those which have already offered many important contributions to lexical studies. Their development, which has often been practised with pioneers' enthusiasm, has taken various uncertain directions which often confuse two concepts of the study of sense which lexicology must resolve (through lexicology, the problem touches semantics and linguistics). It is often very difficult to say whether it is a question of an argument over principles or a simple question of words because the terminology adopted has hardly been established and there is much confusion attached to the use of SEMANTIC FIELDS and CONCEPTUAL (or notional) FIELDS in recent works.

In the strict sense, SEMANTIC FIELDS are made from paradigms of words defined by

[31] The method has even penetrated the works of a more philological inspiration, for example, Casabona (1966), who wanted to see for each term, if such a word could have an animal name in the accusative, the name of a God in the dative or if a verb is absolute. In this case, the precision of traditional methods was linked with the systematization of modern methods.

[32] Following Porzig, Grebe (1966) undertook with a group of research workers to make a complete file of these units for German.

[33] See for ex. the compilations from the Centre d'Etude pour la Traduction Automatique (Grenoble;) Centre de Linguistique Appliquée (Bruxelles).

semic correlation. These are the fields which lexical descriptions traditionally insist upon: SYNONYMIC (and PARA-SYNONYMIC); ANTONYMIC and ANALOGICAL[34] series. This implies that each polysemic word possesses for each meaning its own semantic field, thus reinforcing the para-homophonic status referred to above. 'Small closed series' of vocabulary items have been clearly defined (Hjelmslev) and the structural analysis of these is less conjectural than it is for the rest of the vocabulary. In this way many recent studies inspired by very different methodological procedures have taken it as a starting point (for typical applications see Wandruszka 1950, Porzig 1954, Monteil 1964).

3.441 It was no doubt for these reasons that synonymy interested linguists and semanticians rather than lexicographers who were nevertheless accustomed to making use of this type of relationship in their definition procedures. Nevertheless, it is true that they did it only in an empirical manner (Dornseiff 1921). The important place occupied by these phenomena in lexical interrelationships has caused modern descriptive linguists to dedicate much time to this problem.

The position that synonymy (in its wider meaning) occupies among the methods of meaning analysis has been referred to above. It even represents, according to certain opinions, one of the essential means of IDENTIFYING a language item.[35] The main objective to be reached is naturally the recognition of the different types of synonyms and the description of their nature. Ch. Bally (1909) defined an 'ideal method' for the synchronic study of synonyms, which is still ahead of many present-day procedures: after regrouping in the same series the lexical items linked according to common meaning (a heading of a good ideological dictionary), the series is then submitted to a three-point critical analysis founded on: 1. environment and wider context: this allows the definition of the series by rigorously applying the IDENTIFICATION criteria (cf. common semantic notion); 2. substitutions which do not entail any modification of content (meaning and affective values); 3. the use of the corresponding antonyms so that a still more rigorous definition of certain series can be obtained. Within the group, the differences will show up various categories which are based on intellectual characteristics (logical distinctions) or affective characteristics ('impressive' distinctions).[36]

[34] In order to structure these 'SMALL GROUPS' according to Meillet, or LEXICAL SUBSYSTEMS, Lyons (1963) recently suggested basing them on some type of simple logical relationships: incompatibility, antonymy, hyponymy, inverse relation, antecedence, consequence. These restricted systems have been largely recognized as illustrating the structural possibilities (analyzable without overlap into differential elements) and the resemblance between phonological and lexematic series was evident to many specialists. Cf. Coseriu 1964:152–53.

[35] According to Bally (1909:157), IDENTIFYING a lexicological item is dealing with synonyms without realizing it. From one author to another, the definitions are often too variable. For Bally, the study of synonyms does not lead to envisaging separately the words belonging to the different parts of speech. His theories of the EQUIVALENCES IN CONTEXT are ahead of the more recent transformational interpretations (1909:141).

[36] 1909, chap. *Fondements rationnels de la synonymie*, pp. 140–69. However, at approximately the same date, a linguist historian, A. Dauzat, was in the process of concluding an article devoted to

On a similar basis, modern semantic lexicological works are in agreement on defining synonyms as words which are interchangeable in given contexts without changing whatsoever their cognitive or emotive import (Ullmann 1957b:108–9 and biblio.). However, in modern usage, various degrees of synonymy are distinguished. Besides the PURE SYNONYMS (scientific words)[37] which are not unanimously accepted, all the others are nothing but PSEUDOSYNONYMS or HOMOÏONYMS. The latter can be distinguished either by the limitation of the contexts in which they are really interchangeable or by the evocative and affective values which can be attached to each of them.[38] Works in stylistics have enriched this category considered as an inventory of expressive resources with numerous distinctions based on the most diverse psycho-sociological levels.

Some other attempts have tried to bring out the functional criteria which would give a greater precision to the definition of synonyms. To obtain this, J. Dubois (1962: 197–8) suggests using three parameters: word substitutes ('variantes d'emploi', determining relevance and neutralization), combinatory substitutes, free or uncertain substitutes. It is still too early to make an inventory of such an approach when it has not been submitted to experiment on a sufficiently large scale. More recently, after recalling that synonymy remains one of the most controversial problems of lexical semantics, K. Baldinger (1967a) tried to reformulate the insufficient conclusions offered by Söll (1966) to the problem of the existence of absolute synonyms (Bedeutungsgleiche Wörter). While recognizing that the structural methods alone could not take all cases into account, he gave some new enlightening details, by distinguishing the levels according to which the phenomena must be examined: CONCEPTUAL SYNONYMY (identity of sememes), SEMANTIC OR SEMASIOLOGIC SYNONYMY (equivalence of monemes), DISTINCTIVE PRAGMATIC VALUES (registers and affective values) (see also Baldinger 1967b:133–4).

3.442 Analysis of ANTONYMS has increased in precision in the same manner as that of SYNONYMS. Some years ago, antonyms underwent an examination by a linguist specialized in logics (Cantineau 1955). Today these antonyms are presented as the expression of two types of characteristic OPPOSITIONS: contrary oppositions (*oppositions de contrariété*) and contradictory oppositions (*oppositions de contradiction*).

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the "Etude des synonymes" (1946) where the etymological concept of lexicographers still survives. 'Henceforth the method to be followed is known: to make a work that lasts, all one needs to do is to use the history of the words, to observe their present-day value, to have a sense of evolution, of the life of the language, and to be able to consider the different factors which are important in sense transformation.'

[37] These latter have been called 'PERFECT ABSOLUTES' by Ducháček but have been refuted by Söll (1966) and by Baldinger (1967c) even in the case of scientific and technical terminology for which there is no clear answer.

[38] A table proposed by Erdmann (1925) and adopted by Ullmann (1957b). The details of this classification have been discussed without questioning its basis. Meriggi (1934) admits words of foreign origin in his series. More recently Ducháček has made a detailed diagram (more than 15 categories) in *Différents types de synonymes* (1964). See also Ducháček 1965a:55.

According to this strict plan, a part of the many varieties already listed by Bally (1909, I:114–6) was eliminated: it was a question of 'opposites' (*contraires*) in the widest sense of the word, those which were opposites without being annulled or completely destroyed and in particular the pairs (*couples*), for example 'right/left', associated in the mind because of the concrete opposition in the tangible world and often accompanied by a middle or intermediate term ('beginning/middle/end'). Two recent French studies are worth noting because of their methodological approaches which are radically different and, for some people, complementary. O. Ducháček, a classical semantician, made a detailed analysis (1965a) of all the types of antonyms and classified them according to two main groups: PROPER and IMPROPER ANTONYMS (couples or pairs). Only the first allow a more detailed analysis. Amongst those, he differentiates GRAMMATICAL ANTONYMS (words constructed with a privative prefix) and traditional LEXICAL ANTONYMS amongst which ABSOLUTE ANTONYMS (monosemic) are opposed to PARTIAL ANTONYMS (polysemic or phraseological). In each of these categories, PERFECT ANTONYMS are separated from approximate antonyms. Adopting the functional structural perspective, L. Guilbert (1964) left aside what he called SEMANTIC ANTONYMS, and tried to determine the morphogrammatical system of the antonyms in the subgroup of grammatical antonyms.

3.45

It was through the theory of CONCEPTUAL FIELDS (Begriffsfelder) that the 'structuralist' principles were firstly applied to the area of lexical meanings (amongst recent works on the history of the term *field*, used in linguistics, see Schwarz 1959:245ff.; Ullmann 1962:Ch. 10; Miller 1968:64–87). The idea was directly inspired by Humboldt's conception of language as an organism wherein all parts are conceptually related to one another whereas the SENSE is being identified with the corresponding CONCEPT. It spread quickly to the German linguists, Ipsen, Jolles, Porzig, Weisgerber, Trier who adapted it to the grouping of lexical elements under the concept heading they illustrated (for a discussion of these theories, see Öhman 1951:72–89, 1953:123–134). Although each of them follows a different path, the results finally obtained are much the same.[39]

Trier's influence was prominent especially in two directions: through the application of his principles (linked to the theories of the *Gestaltpsychologie*) to the study of the conceptual field of 'intelligence' in Middle High German (Trier 1931; see also by the same author 1934b, the methodological study in which he pointed out the details on which he disagrees with the 'field' notion in lexicology) and through the considerable interest aroused by discussions which are still going on today on these methods.[40]

[39] The variants may be important: Dornseiff (1933–34, 1938) even alludes to GROUPS OF THINGS in his conceptual (or ideological) lexicography works. For semantic structures, see Porzig 1934, *Das Wunder der Sprache* 2 (1957), and Coseriu 1967.

[40] According to the theories of Ipsen and Trier, the vocabulary has a structure without 'gaps'. These theories have been discussed by comparative lexicologists. The verbal division of the mental organiza-

Undoubtedly Trier's ideas had great influence at the time and many recent works continue to quote him as their authority[41] despite the fact that severe criticism has been formulated. For some people, the approach which deals with extra-linguistic data is not really linguistic (P. Guiraud); for others (Wartburg), a great number of human activities and hence numerous concepts are by their very nature imprecise and this makes their definition almost impossible; for still others (S. Öhman) the subjective appraisal of each speaker involves such variable concepts that it is useless to try to grasp them. After much consideration of the above criticism, E. Coseriu (1964: 155–8) recently decided to try and find a theoretical justification in linguistics for Trier's conceptual fields (see also Spence 1961) whilst K. Heger (1965) tried to use new linguistic terms to grapple with the definition of the CONCEPT and its allocation to the role of a second metalanguage.[42] Today the discussions can be summarized in the following manner:[43]

A first approach to which we can give the name ONOMASIOLOGY (the study of lexical fields whose elements of crystallization are a concept '*concept-signifié*') saw considerable development between 1930–60 in most European countries. It does not represent only the complementary approach of the semantic evolution of words (SEMASIOLOGY); it aims at much more: to be the descriptive and structural method par excellence, that must be adopted in the overall study of vocabulary facts.[44] On this point, many works have given proof of its efficiency (cf. Ricken 1961b). B. Quadri had formerly made the most complete diagram in his *Aufgaben und Methoden der onomasiologischen Forschung* (1952), to which more recent additions have been made in the light of present debates.

But it is not only a question of a convenient procedure for organizing the vocabulary around a 'notional field' in a less arbitrary manner than the old alphabetical presentation. Today the semanticians admit that all vocabulary implies an organization of words such as the data of experience imposes it at the different levels of language use. G. Mounin (1965a-b) and E. Coseriu (1966) have given some recent examples. K.

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tion of reality and experience is not done in the same way by all languages. Wandruszka (1965) and more recently O. Ducháček (1968) have shown that even in languages of great civilizations, important lexical 'gaps' can exist. They take into account the lexical evolutions brought about by the need to restructure certain fields.

[41] Amongst the most remarkable, see Sckommodau 1933; Armknecht 1936; Cladder 1940; Kröll 1950; Benning 1961. See also Betz 1954; Konradt-Hicking 1956 for a critical appraisal. For example H.-G. Schöneweiss 1955 shows that a distinction should be made between the FIELD of material names (dingliches Wortfeld) deduced from his study and the intellectual field (intellektuales Wortfeld) such as it was explored by Trier. For applications to lexicography by W. von Wartburg and his school, see 6.312.

[42] See also for this problem of general semantics, the complementary justification suggested by Heger 1968.

[43] Baldinger (1964) has given an excellent summary of the two approaches.

[44] The reader is referred to the typical works quoted in the bibliography and in particular to Renson 1962. Amongst the first applications in the Swiss monographs, see also K. Ankersmist (1934). On Hallig and Wartburg's 1952 *Begriffssystem*, see 6.312. Many works in descriptive lexicology published after 1955 applied these views, cf. Wartburg 1963:190n.

Heger (1965) has analyzed the type of logical relations established between the first concept and the different meanings of the monemes which are included.

A second more ambitious attitude has come out of the preceding approach, which is considered by some too traditional and, in the extreme, outside modern linguistic trends. It aims at developing a STRUCTURAL ONOMASIOLOGY (the abuse of language is evident here) which would be based on a structural system of concepts.[45]

This research is outside the limits of our general survey. It tends to develop abstract MACRO-SEMANTICS (Baldinger describes the concept SOUVENIR by using an 'algebric' formula) which appears for the moment to be very far outside the LEXICAL SUBSYSTEMS for which the lexicologist possesses reasonably sure descriptive means.[46] In the present state of our knowledge, research workers do not envisage the necessity of formulating the existence of an intermediary conceptual universe (*Zwischenwelt*),[47] which is itself structured, for describing the lexical fields (*Wortfelder*) by structural methods.[48]

Today, SEMANTIC CONFIGURATIONS represent a field distinct from the preceding one to which it was previously attached by many common features. Like the preceding ones, these configurations defined the lexical units which were linked by a common semantic element. But here, it is no longer a question of a CONCEPT which linguists believe they can determine with a certain precision, but rather of NOTIONS involving at the same time SENSE, SUB-MEANINGS and VALUES. These relationships, much less frequent, 'contextual' in the wider sense, do not seem to be able to be structured since distinctive oppositions cannot be brought out. Thus, they belong to the same category as the many ASSOCIATIVE series.[49] Without going into details on the interest of these organization patterns for stylistic works, we would like to point out the interesting attempt by G. Matoré (1953), who studied some of the lexical units which could be used to define a society or a social concept. He started from characteristic relations in the synchronic use of a network of WITNESS-WORDS connected with KEY-WORDS which gave cohesion to the overall plan (the part played by subjectivity in their determination is not questioned here).

[45] 'Instead of looking for the monemes which indicate a certain concept, rather the question is to know what are the formal oppositions which, in one or several languages under study, are used to express conceptual oppositions which make up the structure of the system from where one starts out. This way a scheme would result whose structure is identical to that of the conceptual system at the beginning and which consequently does not depend on the immanent structure of the language studied; but this diagram is full of monemes which belong to the language studied' (Heger 1968).

[46] Thus for Baldinger (1960), there would be MACRO- and MICRO-ONOMASIOLOGIC fields according to whether concepts or words were dealt with.

[47] Coseriu (1964:158) tried to combine the theory of conceptual fields with the functional doctrine of linguistic oppositions and suggested reducing them to organize and define lexical systems through immediate distinctive oppositions independently of all associative relations.

[48] Heger (1965 and 1968) clearly envisages the objections that can be raised against the various lexical applications of these approaches. He presents in the 1968 article some very interesting justifications.

[49] Coseriu 1966, which distinguishes the lexicology of the language system (to which functional methods could be applied) from the lexicology of the norm, is opposed to the former by the fact that it must take into consideration the non-distinctive features and especially the social or contextual values. Thus, the latter can only appear to be structural.

3.5 *Quantitative Descriptions*

The numerical analysis of the lexical elements has gradually assumed an important function in recent vocabulary works. What is sometimes called LEXICOMETRY or the study of word frequency seems today to be a necessary approach to modern linguistics. It could supply essential and accurate data for certain minute works (unit identification or stylistic characterization) as well as opening up new vistas for general research. Most of the trends presented in the previous paragraphs have had statistical treatment: see for example Vey (1960), Herdan (1965) on syntagmatic chains, G. Müller (1965).

Lexicostatistic works are not recent. The first goes back to the end of the last century, like most of the other methods of statistical research applied to linguistics. But it was not until 1940 when new methods were perfected, and when the analysis of the functional features of languages were recognized as valid, that lexicometry became what it is today. Before this date it was a question of speaking of quantitative lexicology rather than lexicometry. This has been proved by the numerous well-known works that have been published in this field.[50] Here we would like to point out the three principal trends which have sprung up over the last 15 years:

— The statistical analysis of texts. This has always expressed itself in the desire to count 'all' the words in a text and to present word-tables and more recently INDEXES or CONCORDANCES (see 5.) and frequency dictionaries[51] with essentially practical aims. But the word counts prior to 1940 were more often incomplete and without any form of systematization. Either they were limited to partially listing certain categories which were considered as secondary for various reasons or they neglected the words which were apparently less frequent. Since the pioneering works of Zipf and Yule, the statistical methods on which European research is founded today require procedures which are much more rigorous.[52] The statistical data taken from a text (or the complete works of an author) are generally based on an exhaustive analysis and are accompanied by the strictest normalization of the criteria for defining the counted units. This was an indispensable condition if a significant exploitation of the results was required. On analysis, the grammatical items revealed their great interest as items of low frequency (see for example the methodological reflections by Ch. Muller 1962b, 1966). The statistical appendices, in addition to the indexes or concordances which are published today, try to give the first coherent items of information.[53]

[50] The reader is referred to the Bibliography of statistical linguistics drawn up by Guiraud and Whatmough (1954), and to the bibliographical headings of the works quoted below.

[51] One of the most recent achievements of this type is Wängler 1963. See also Hassan 1963.

[52] The new methods of lexical statistics owe much to the general theoretical works on mathematically inspired statistical linguistics. See in particular Herdan 1956, 1962a-b, 1964a, 1966; Fucks 1953, 1959; Guiraud 1960. Special chapters on lexicostatistics appear in these volumes. Certain general works cover linguistic, mathematic, and lexicological studies, see in particular *Statistique et analyse linguistique*, Paris, 1966 (Colloque de Strasbourg, 1964) and Kreuser, ed., 1965. For problems of lexical statistics, see in particular: Guiraud 1954a; Wagner and Guiraud 1959; Ch. Muller 1967, with a bibliography of many detailed studies by this author.

[53] The aim of the statistical appendices to recent indexes is mainly to collect the following data: total

— Statistics which have a pedagogical aim and whose objective it is to draw up simplified or basic vocabularies. Since the last war these statistics have assumed a very important role due as much to the variety of their new programmes as to their research methods, but in fact they had already reached Europe in 1936. At that time, statistics were represented by the first Anglo-Saxon achievements (West, Palmer, Hornby) and were intended for the teaching of English as a foreign language. From the very beginning, they raised the problem of the CLOSED VOCABULARIES (vocabulary islands) such as BASIC ENGLISH. This formed the reservoir from which OPEN VOCABULARIES would be subsequently defined.[54] The research work which was carried out a little later in various countries was still based on comparatively similar concepts. Most of the time, it was a question of analyzing literary texts, data taken from every-day written language, and even from children's statements (some of the outstanding works: Muegge 1936; Noesgaard 1940; Migliorini 1943; — see also Aristizabal 1938; V. García Hoz 1952).[55] Since 1950, these studies have been renewed by statistical inquiries based on a vastly different methodology and concerning the relatively unexplored field of spoken language. Great attention was given to determining the socio-cultural background of the samples and their rigorous distribution in the data (corpus), so that the gathered information facilitated an analysis of a still unknown richness and precision. The introduction of new functional criteria in vocabulary analysis based on psycholinguistic data (active and passive vocabulary, free words) (Michea 1949; Gougenheim 1959, 1963, 1966) has allowed the blending of the inquiry which was carried out from tape recordings, and a series of complementary oral tests and questionnaires. Among other things these enabled the balancing of frequency indexes of the statements which only give a partial idea of the overall reality of every-day vocabulary. The first results carried out by the *Français élémentaire ou fondamental* are the basis for inspiration of many similar works being done in other countries (Rivenc 1966), taking into account the criticism that has been levelled at this study.

— A third group is represented by the frequency word counts used originally for rationalizing the methods for transcribing words (simplification of spelling, shorthand and typing) and those of the different codes and telecommunication systems, etc. It is known that frequency word counts are one of the oldest fields to be explored by extensive statistical methods.[56] It has made use of the contribution of statisticians,

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number of words in the text, number of different words, number of different forms, number of forms corresponding to each notional category, distribution of words and forms in the text; cf. the collection of *Documents pour l'étude de la langue littéraire*, published by Quemada 1964–69.

[54] See the *Interim Report on vocabulary selection for teaching English as a foreign language*. London, 1936. H. Bongers (1947) has established a critical inventory of the first achievements.

[55] Gougenheim et al. (1956) have drawn up a critical diagram of the methodological principles used in these works.

[56] The most famous of the first inventories using this sort of mathematical analysis, is by J.-W. Käding (Berlin, 1897), which covers more than a million German words. It was intended to help perfect a shorthand system. Another stenographer, J.-H. Estoup, proved, at the beginning of the century, that the distribution of the words in a text followed a statistical pattern. Zipf, later, gave much attention to this pattern.

physicists and information theory specialists (see in particular Mandelbrot 1954, 1957) and offers the most elaborate mathematical results on which various attempts at a structural description of a language can be based (Malmberg 1963; Dubois 1966b: 95–8). But it must be recognized that by the very quality of the research workers who are devoting their time to this work, it tends to contribute to extending purely mathematical knowledge rather than that of lexical studies as such.

New research work directed more towards lexicological interests has taken its inspiration from the more recent achievements of linguistic statistics.[57] Here works should be mentioned which are being completed at the present moment:

— the applications of these linguistic statistics to the stylistic or chronological characteristics of the literary vocabulary and the language of authors. Although they are not of recent inspiration, they have known a revival in Europe since the work of the pioneers A.-S. Ross, A. Ellegård, P. Guiraud and Ch. Muller. The works of L. Rosiello, L. Delatte and E. Evrard brought a new methodological precision which the previous works lacked.[58]

— quantitative studies based upon the fund of lexical data (that must not be confused with American GLOTTOCHRONOLOGY which has remained without appreciable support in Europe) have been done according to the descriptive or historical perspective of the vocabulary. G. Gougenheim (1960) has shown the importance of the observations that can be drawn from a complete quantitative analysis of texts of the Middle Ages in order to throw light upon the problems of lexical rivalry and the substitutions which have resulted from it. In the descriptive perspectives of old lexical structures, A. Tudose (1965) decided to establish a basic vocabulary for 16th century Rumanian. J. Dubois (1966b) tried to determine, starting from the analysis of a reverse dictionary, the structural correlations between the gender and the endings of the words, the types of suffixation and the basic forms. Trying another approach, Dubois (1965) applied the numeric data to the definition of lexical layers which were historically different (variation of the volume of lexical information in function of the frequency of use).

4. HISTORICAL AND COMPARATIVE LEXICOLOGY

Historic research on vocabulary, which is the direct heir of the works of the last century, was greatly developed at the beginning of the 20th century and has continued to flourish and make important gains in all Europe. The vast current of synchronic studies which characterizes the renewal of modern studies, has added to historical and

[57] The printed report of the Meeting on *Statistiques et analyse linguistique*, Paris, 1966, gathers in one volume different significant examples.

[58] The bibliography of Guiraud can be completed after 1954 with the help of the works of Herdan and Ch. Muller which include very rich appendices. In particular upon these points, the reader is advised to refer to the discussion opened by A.S.C. Ross 1950:122 sq.

comparative lexicology a much more rigorous methodological basis. In this way, the approaches are more sure and the work profits from a complementarity of points of view which, today, no linguist would think of contesting: 'The diachronic analysis consists of placing two successive structures side by side and bringing out the relationships by showing what parts of the former system were touched or threatened and how the final solution was prepared in the future system' (Benveniste 1966c:13). In the same way, the new contributions of lexical semantics and lexicography, the influences exerted by the results which were obtained in allied research (dialectology, onomastics ...) have largely added to the increase in number and variety and the ambitions of research in this field. At the same time, the overall works, either isolated or linked to the history of the language, have had most rewarding and stimulating contacts with more detailed works — monographs or word histories — they have offered mutual inspiration and have completed each other.

4.1 *Etymology and Historical Lexicology*

This represents one of the most important parts of the lexicological activity over the last 50 years because of the renewal of its methods as well as the scope of its results. It is also one of the best known fields in this discipline.[59]

It is known that the last century contributed to the development of a more scientific etymology, as it was based on the new results acquired from comparative and historical phonetics: Meyer-Lübke writing on the Romance languages has produced some of the most famous works. This too exclusive etymology was questioned at the beginning of the following century even when the progress of semantics was proving the insufficiency of a method that gave no attention to the study of meaning nor to its importance in explaining the transformation (Thurneysen 1904 is one of the best theoretical examples). In addition to the etymology which was limited to comparing forms, after taking into consideration the phonetic laws, one would have liked to have seen an etymology follow which took note of the successive evolution and the semantic correlations. The specialists of the beginning of the century frequently opposed a FORMAL ETYMOLOGY 'materielle Etymologie' to a SEMANTIC ETYMOLOGY 'geistige Etymologie',[60] which in its turn was linked to POPULAR ETYMOLOGY (Orr 1954), but soon all were agreed on the complementary nature of the approaches. A new barrier was overcome in 1920 when the criteria of probability, which appeared from the agreement of the phonetic and semantic data, no longer seemed sufficient. The documentary richness of the works of linguistic geography[61] based on the widespread

[59] Zumthor (1958) has completed the history of the word ETYMOLOGY and noted this evolution. For the history of etymological methods and for an excellent example see Baldinger 1959b, and the articles by V. Kiparsky and by Lohmann both published in 1966.

[60] Cf. L. Spitzer, *ZrPh* 48.86–98 (1928).

[61] The works of J. Gilliéron (cf. Biblio.) are amongst those which most influenced this new tendency. For an overall view of these relations see H. Kuen 1958.

principles of the Wörter und Sachen School imposed the conviction that only minute knowledge of the linguistic as well as extra-linguistic circumstances which surrounded each period of the evolution of words would give positive results. This knowledge alone seems to enable lexicologists to show the different changes and examine their causes, conditions and consequences. This new concept of etymology will replace the old ORIGIN-ETYMOLOGY by the new HISTORY OF WORDS ETYMOLOGY.[62]

It is not only a problem of extending the perspective. This new LEXICAL BIOGRAPHY was accompanied by a radical change in the methodological procedure. To solve the mystery of the birth of a word is, from this point of view, only one of the aspects of the research to be done and it is not always the most important. It is by going into the detailed history of a word that its origin can be proved. As long as the former has not been solidly established, the latter will not be completely acceptable. A scientific etymology which has this type of program does not exist today.[63] All the European languages have not equally benefitted from this research. Up until now, the Romance languages have occupied a privileged place because they have been based on an uninterrupted linguistic tradition and practice of two thousand years, which provides the linguist with extremely rich documentary sources.[64] The works of O. Bloch, W. v. Wartburg,[65] E. Gamillscheg, F. Schalk, A. Graur, R.L. Wagner, C. Battisti, J. Corominas ... on Romance languages, and those of Onions and A.S.C. Ross for English have shown the efficiency of this concept.[66]

STRUCTURAL ETYMOLOGY is the more recent aspect of the methodological renewal.

[62] This is the point of view defended by M. Roques, *J. Savants*, Paris, 1905, and Nyrop, *Rec. de textes*, Copenhague 1915:105–19; A. Meillet, *BSL* (1918:81); Wartburg, *FEW* 'Vorwort zur ersten Auflage' 1922. For a more recent method based on ORGANIC ETYMOLOGY, according to which the naming of objects belonging to the same group, and objects integrally belonging to other objects, has the same origin and the same history, see Vidos 1957.

[63] It will be noted that the British etymologists are amongst those who have remained faithful for the longest period to the old formula. The reason for this is that the variety of the origins of the English vocabulary has always led them to make relationships on a grand scale according to the etymons which often go back to Indo-European. An etymological note conceived in this way shows the Latin, Germanic, Greek or Semitic origins of a word. These vast surveys have always been presented with very brief chronological summaries. See for example the most recent work by Klein 1965.

[64] The importance that these lexicological data assume is evident when the material is considered in this light and in particular the importance of the first 'attestations', datings of neologisms, loanwords and new collocations. Cf. B. Pottier 1958 and the collections of *Matériaux pour l'histoire du vocabulaire français* which have been published by Quemada since 1959. The reader is referred to the specialized bibliographies which give very numerous word references on recent WORD STUDIES. See in particular Levy-Poston, Quemada, Wexler and M. Lemmer. For characteristic studies see Vernay 1962 and Evans 1967.

[65] See in particular the methodological justifications put forward concerning the monumental *Französisches Etymologisches Wörterbuch* (1922), by its author, Wartburg 1931, 1953, 1961, or by his followers: Zumthor 1955.

[66] It was in the same line of thought that the Belgian philologist Henry defined the method which he adopted in his *Etudes de lexicologie française* (1960). To explain vocabulary facts is to throw light on the past through the present, on history through geography and reciprocally, by using as a base a 'philology which is as rich and rigorous as possible'. He gives details on the procedures to be followed (p. 5–6).

Naturally, this name corresponds, like everything that deals with lexical structuralism, to very different trends. The oldest go back to the teachings of Gilliéron, Meillet and the Geneva School: it dealt with systems which included lexical unities. These systems enabled the linguist to prove that the change of meaning of such and such a term could be explained by a change of its lexical environment, the latter being considered as a complex network of associations as much at the level of form as at the level of sense. Writing the history of a word amounts to writing the history of one or several groups (or families) of words linked by the various formal or semantic relationships which have varied in the course of history.[67] The German and French Romance scholars with W. von Wartburg at their head, gave many examples of this type of explanation of the evolution of vocabulary items.[68] A close relationship was to link this concept of etymology and the studies of descriptive lexicology. The history of words and that of vocabulary thus became the privileged synthetic field for the two trends: the former which was essentially analytical, diachronic and external, the latter, systematical, synchronic and internal.[69] J. Vendryes (1953) outlined in this manner the programme of a *static etymology* without being afraid of the surprising effect produced by such a statement. A particularly original trend is being established in the latest research by P. Guiraud (in particular 1968), who, while accepting the most recent achievements of structural semantics, refutes the principles of semic determination adopted by the present-day works (this allows him to underline in passing the specific character of lexical studies for which the sign-word (*mot-signe*) remains the inseparable unity). Very attractive prospects have been opened up to research by such problems. They, nevertheless, imply a great amount of preparatory analysis which is far from being completed.[70]

[67] I.e. its COGNATE WORDS (*congénères*) or its HOMOLOGOUS ones (*homologues*), according to Wartburg's terminology. Baldinger (1959b:243), made a list of the different fields which were dealt with. For R.-L. Wagner (1967:52) the etymological index card should contain, besides the etymon, ALL THAT IS KNOWN about the section of vocabulary to which it belongs, the extension and the frequency of its uses, etc.

[68] The best known examples for French are the etymology of 'woman' (*femme*) which deals with the 'notional' field of the names of 'female' (*femelle*) in Latin or that of thigh (*cuisse*), dealing with the series of terms naming the hip and the leg in Late Latin. Cf. Wartburg 1963:126 sq. and also some other examples in his 1954 article; Baldinger 1959b:242 sq.; Gamillscheg 1958.

[69] For example, over the last 20 years one of the most often discussed problems is that of the contacts between groups and families of words due to the parallel between form and meaning which has brought about numerous lexical interminglings and consequent ambiguities concerning the history and the research on the origin of words. Cf. Wartburg 1952; Guiraud 1956, 1961, 1966.

[70] These reflections are based on the determination of ETYMOLOGICAL CATEGORIES which are, as far as diachrony is concerned, closely allied to LEXICAL CATEGORIES when the latter are considered from a synchronic point of view. This being admitted, the same LEXICOLOGICAL LAWS (see i.e. Guiraud 1967) govern each series, the significant relationships which exist between the two aspects (*signifiant* = name, *signifié* = sense) of a lexical unit. Structural etymology is going to try and define patterns or elementary structures of the vocabulary (ETYMOLOGICAL STRUCTURES) which show the origin of words, starting from a typology of the methods of lexical creation. Yet, we are obliged to admit that the lexical sign belongs to the SYSTEM as well as to HISTORY. Etymological reconstruction will also have to be based on a body of LEXICOGENIC assumptions (i.e. taken from the details or attributes of the objects after which they are likely to be named), which are only themselves probabilities.

4.2 *Historical Lexicology and Social History*

Associating the HISTORY OF MAN with the HISTORY OF WORDS, hoping to arrive through the study of vocabulary at an understanding of man and of society — a finer understanding that is superior to that suggested by other methods — is in no way a new endeavour. But it is certain that the development of lexical research during the first half of the 20th century and in particular the renewal of the concept of etymology have contributed a great deal to its success. It has become part of the preoccupations of many European lexicologists at the risk of introducing confusions as to both the object and the real nature of their research. Is this research still dependent on linguistic lexicology? The limits of external and internal linguistic facts are often left far behind here.[71] Today, three principal tendencies are still having their influence to different degrees and often mixing their original characteristics.

— WORDS AND THINGS (Wörter und Sachen): since 1920, this School has played a very important part in the development of dialectal lexicology and semantic etymology, especially in countries speaking Germanic languages, under the impetus of Meringer (Germanic School) and of Schuchardt (Romance School).[72] Proposing that the meanings of the words are equivalent to the concepts and, because of this, to the realities which they name (what does not have a name does not exist in this world!), this theory ensured that only the study of words placed in their extra-linguistic environment and in their socio-cultural milieu would allow lexical research to progress. But the great majority of these works tend to concentrate on the study of isolated words contrary to the following tendency.[73]

— The German IDEALISTIC (neophilological) school supported by Vossler, Lerch, Spitzer, Weisgerber, etc. ... has returned to Humboldt's criteria according to which social communities are animated by a certain 'Geist' which expresses itself in the language of a group. On this principle, associated with that of the study of conceptual structures mentioned above, this school has established that the evolution of vocabulary is a reflexion of the spiritual evolution of those who use it, and that it should be possible to find for each period a specific mark of genius (innere Sprachform).[74] Under

[71] The historical lexicologists generally maintain an attitude hostile to formal methods. The study of content itself will exist in its own right for a long time against the abstract nature of structural semantics. A. Gill (1953:97) maintained that: 'We will continue to refuse to go back over the concepts, images or engrams and we will always look towards objects.'

[72] See the case put forward by Meringer, published on the front page of the first issue of the review *Wörter und Sachen, Kulturhistorische Zeitschrift für Sprache und Sachforschung.*

[73] His influence extended especially to the German and Scandinavian countries. For the dialectological works, see the collection *Festschrift K. Jaberg*, Halle, 1937 and the works by the Swiss School; the linguistic inquiries undertaken for the preparation of the *Atlas der deutschen Volkskunde* and those conducted by Lid and Solheim, *Ord og Sed*, Oslo, 1934–37, and by D. Zetterholm, *Nordiska ordgeografiske Stud.*, Uppsala, 1937. See a more recent appraisal by Gerhardt, *Wörter und Sachen* (1949), H. Flasdieck, *Zinn und Zink* (1952), Gerleman, *Wort und Realität* (1954). For the Romance languages, see Paiva Boléo (1965), J.G.H. de Carvalho (1953), García Martínez (1960) and the etymological research done by the Swede G. Tilander, for example.

[74] Cf. *Idealistische Neuphilologie*, Festschr. Vossler, Heidelberg, 1922 and Weisgerber 1926.

the guidance of L. Weisgerber, who was the head of the school, German lexicology turned towards an immense programme of study of the relationships between the language and cultural phenomena: relationships between language and religion, language and science, language and arts, language and philosophy (see in particular his statement *Die Stellung der Sprache* ... (1933). These views, often far too exclusive did not always convince other European research workers (and in particular the Romance research workers).[75] Nevertheless, they have profoundly marked certain recent sociolinguistic works[76] because of the application made by various research workers, who often followed different paths with the hope of reaching the same end, such as Ipsen, Porzig, Trier and their followers.

— The SOCIOLOGICAL SCHOOL is more particularly represented by the work of French and Romance linguistics and already at the end of the last century attached great importance to the links which united language items (and in particular the vocabulary) to different social factors. It could even be thought that these factors, according to a rigorous form of determinism, condition all normal phenomena and at the same time all lexical transformation. Through the influence of Meillet, F. Brunot and M. Roques, the theory that 'words are the witnesses of history' (see Brunot 1928, 1929; Nyrop 1924; Bertoldi 1945; Cohen 1949, 1956; Gougenheim 1962), accepted then by both linguists as well as by historians, has inspired an important section of contemporary research on vocabulary (for the historians see Febvre and Hauser 1939; Febvre 1954 — for the lexicologists Matoré 1951; Quemada 1955; Wexler 1955; Hollyman 1957; Proschwitz 1956). The structural trends which characterize it are evident especially from the overall diagrams in which the groups of words defined by given situations are studied in a synthetic manner. By providing similar principles as a basis of a social or sociophenomenological lexicology, G. Matoré was even more systematic. Matoré's lexicology aimed at explaining the various 'states of society' starting from linguistic facts and the process of social evolution through the evolution of words (Matoré 1953, 1962). But besides the stimulating views it suggests, the uncertain future of this last prospect, while resolutely deviating from the aims of linguistics, should not be associated with history or sociology, especially if the specialists do not follow the same path, as far as the interpretation of the ultimate facts is concerned.

4.3 *Comparative Lexicology and Loanwords*

A great number of works devoted to the problems of vocabularies in contact, word-

[75] For the discussions which brought about much opposition amongst the most famous of them, see G. Rohlfs, *Sprache und Kultur*, 1928, p. 7 and *ZFSL*, 48:121–36 (1925), 51:309–16, 354–63 (1928); for the discussion between L. Spitzer and Gamillscheg, see *ZrPh* 42:5–21 (1922), 46:563–617 (1926), 48:77–113 (1928), and *ZFSL* 50:216–98 (1927).

[76] See in particular S. Öhman, 1951 and the collection *Sprache — Schlüssel zur Welt*, Festschr. L. Weisgerber (1959). For the influence of the neophilological theories on Italian lexicology, see Bertoldi 1946a.

translations ('calques'), and loanwords, are particularly worth mentioning although in a number of respects they come from the preceding categories. It is not that the overall orientation of these works is new — as it was proved by the general inventory drawn up by L. Deroy (1956)[77] — but for 30 years in almost all countries a growing interest has been aroused by such research where philology and history of civilization meet.[78] On a renewed etymological basis, some important loanword inventories have been completed in most languages.[79] The enrichment sought by this type of work can only take place if very exhaustive data, within the limits of rigorous inquiries, are gathered. These inquiries tend to be systematical, and hence limited to restricted fields where conditions and stages of the passage and adaptation from one language to another can be closely observed with utmost linguistical and historical precision.[80] They also should allow 'to find the particular circumstances of life of those who borrow and the conditions when the borrowing has taken place' (Vidos 1960).

At the same time there are some scholarly works of the classical type of which the best example is no doubt that of R. Arveiller (1963) (this work is devoted to exotic and marine terms which entered French from the 16th to the 18th centuries) (see also Höfler 1967). Some methodological research has been developed on the system and the conditions of borrowings of all sorts. Besides the major work by B. Vidos, devoted to technical terms (1965), M. Roques (1948) has dealt with the semantic uncertainty of loanwords; J. Orr (1962) has studied the similarities between two languages which favour changes of meaning; E. Leisi (1955) has observed the rivalry of words of different origin in the same lexicon, and Käsmann (1961), the phenomena of the inclusion of loanwords in lexical series; T. E. Hope (1962, 1965) has made use of the data of historical and structural semantics for interpreting loanwords and bringing out the linguistic 'motives' of the borrowing; B. Migliorini (1948), J. Dupont (1951–53), B. Vidos (1960) have examined bilingualism and the method of word-translations (calques) and loanwords, etc.

From a similar standpoint, particular attention has been paid over the last 10 years to vocabularies of marginal zones between dialects and especially to the influence of regional languages in the elaboration of the vocabulary of a common national language (see in particular Baldinger 1957, 1961, 1966; de Tollenaere 1963a).

5. LEXICOLOGICAL INVENTORIES AND NEW TECHNIQUES

Whether their inspiration is historical or descriptive, all contemporary works on

[77] Contains a very important bibliography on the most diverse languages.

[78] This was already the perspective of the following studies: C. Llewellyn 1936; and that of J.-F. Bense 1939 or of F. Mackenzie 1939. See also Migliorini 1940.

[79] Cf. the bibliography of Deroy, and M. de Paiva Boléo 1965. However, it will be noted that many works before 1940 were especially sub-products of etymology, for example, M. Searjeantson 1935, which only makes a synthesis of data taken from the the *OED*. Specialized etymological dictionaries are being prepared now. Cf. *The etymological dictionary of Hungarian items in Rumanian* which was presented at the Xth Congress of Romance Linguistics (1965), cf. *Actes* II, 869–73.

[80] See for example S. Heinimann 1946 on the loanwords in the Italian newspapers between 1914 and 1919, and G. Panten 1959 on the Americanisms in Great Britain.

vocabulary accentuate the necessity to have data which are both SYSTEMATIC (we can often speak of EXHAUSTIBILITY when a limited range is under examination) and VERY RICH (we would naturally agree to saying 'the richest possible' without fear of criticism from neo-positivists because we have already explained this point above) (cf. Quemada 1959, vol. 1: Preface). The works undertaken over the last 20 years on vocabulary cover data which are even wider than ever: the *Trésor de la langue française* will be based on 25 million references; it is no longer unusual to see university works using 100,000 to 500,000 index references. It can be understood that in order to deal with such quantities, new means are needed. The idea of creating Lexicological Archives is slowly making headway in each country. Slowly and cautiously without speaking of the naive myth of exhaustibility, these positive principles of cumulative work seem to be gaining the acceptance that they deserve. Already before 1940, many large-scale inventories had been started without especially aiming at a publication (for example, the *Thesaurus Linguae Latinae*, in Munich; the *Inventaire Général de la Langue Française*, in Paris). Since this date, these experiments have been taken up again on a very large scale by national undertakings[81] as well as equally efficient smaller groups of research workers.[82]

At the moment this movement is most active in France but many European countries have set out on the same path (Belgium, Germany, Italy, Netherlands, etc.). If the results of these experiments are taken into account, it is possible to distinguish a programme which is slowly beginning to take shape: centralizing existing but dispersed lexicological material; drawing up a plan to investigate new sources and to limit the various fields etc. (Gili Gaya 1947; Quemada 1955); elaborating new lexicological data and means.

In order to achieve all this, new methods of inventory-making have profoundly changed the conditions and the perspectives of lexicological text analysis, as well as the methods of working, and the use of the end-product. Besides the techniques which only aim at making easier the copying of the context,[83] it is especially the methods of handling the data and the semi-automatic control by punch card machines and computers which have over more than the last 10 years practically renewed the possibilities of research. These machines were introduced by P. Busa in Italy as early as 1951 after American experiments,[84] but since 1957, Quemada (1959 and 1961) has considerably extended their use to larger lexicological works. Since this date, their success has been extended even further in Europe.[85] This new concept (Quemada 1962) of Lexical

[81] See for example the projects of the centres of Besançon, Florence and Nancy.

[82] Cf. J.-M. Goulemot and M. Launay 1966.

[83] Since 1946, the Norwegian Lexicological Archives have been using photostat copies and stencils (which are still in use for the old Danish and modern Frisian dictionaries). In East Berlin, G. Ising has perfected a photographic method of text analysis. The advantages of xerographic reproductions are being used very skilfully in Göttingen for the new *Grimm Dictionary*, cf. J. Bahr 1962.

[84] Cf. Busa 1951.

[85] The reader is referred to the general works of F. de Tollenaere 1963b; Štindlová, ed. 1968, which give an overall bibliography. See also Kukenheim 1959.

Archives having their own raison d'être can supply research workers of every description with two types of basic research tools: INDEXES and CONCORDANCES. WORD INDEXES, which first were inspired by statistical lexical research have rapidly proved that they could offer repertories of first importance.[86] These repertories were made by hand but today this work is done by machines and their handling is easy and more economic and reliable. Many important projects are being undertaken in a great number of countries.[87]

5.1 *Text and Particular Author Concordances*

These have replaced the former selective compilations of the 'language vocabulary of ...' type. The possibilities developed from the technical means have prompted research workers to establish projects for exhaustive concordances, at the same time as indexes of various types.[88] Sometimes mixed methods have been suggested to reconcile the needs and the imperative economic factors which are often contradictory.[89]

At the same time as the preparation of these documents (and often presented as by-products), different types of indexes or tables of words have been more or less currently established. They have rendered enormous services to research workers and they have already provided a stimulus to numerous works. The most frequently referred to are the indexes and reverse dictionaries,[90] the indexes of forms, lemmata, homographs, rhymes etc. presented in alphabetical order by increasing and decreasing frequencies etc. by grammatical categories, morphological components, etc. according to the delicateness of the pre-editing and analysis (see in particular the series of tables in Mater 1966–68, 1968). During the elaboration, many methodological problems are brought up which are linked with the essential postulates of lexical research, showing once again the interest and the interference by applying mechano-linguistical methods to the development of the lexicological theory itself.[91]

[86] See in particular Wagner and Guiraud 1959. 'The complete index is the only instrument with which exhaustive and intellectually satisfying works on the existing language can be made' (Gougenheim 1964).

[87] Most of them have been announced in *Statistique et analyse linguistique* (1966) and in Štindlová, ed. 1968.

[88] A quite complete report of the most recent European achievement can be found in Štindlová, ed., 1968. A large number of concordances prepared for the *Trésor de la langue française* have been noted since 1967 in the periodical *Le Français Moderne*, Paris.

[89] Thus a concordance can only be exhaustive for a limited part of the text; for example indicating all the data taken from the text concerning LEXICAL WORDS and using references (of the index type) for GRAMMATICAL WORDS.

[90] This category is worth a separate mention. Although it is not new (the Rumanian Academy published in 1957 its *Dicţionar invers*, and in 1958 M. Vasmer and H. Bielfeld published in Germany reverse Russian dictionaries), it has undergone an important development thanks to the use of mechanized means. In particular, after 1960 the following appeared: B. Quemada, *Dictionnaires français inverses* (Littré 1961; Larousse 1961); M. Alinei 1962; E. Mater 1965.

[91] The technical problems raised by their elaboration have been brought up at different times by Busa 1962, L. Delatte and J. Evrard 1962b and Delatte 1965. See also the introductions to the

6. LEXICOGRAPHY

European LEXICOGRAPHY, the main branch of lexicological studies (often confused with LEXICOLOGY itself) has undergone a considerable development during the second part of this century. This development corresponds firstly to the vast impetus in historical studies brought about by philology and the great works of the positivists of the last century. Present-day development must be considered of particular importance more because traditional methods have been reappraised in the light of recent linguistic theory and technical advances than because of the quantity and range of the works published.

The promotion of the 'gentle art of lexicography' (Partridge 1963) to the rank of a scientific (or more precisely a para-scientific) discipline able to get inspiration from the linguist's thought and to inspire his reflection, at the same time raises lexicography above the traditional practice of dictionary makers. This promotion is certainly one of the essential facts which has considerably renewed dictionary making over the last ten years. Lexicography which, until recently, had been limited to the ART OF MAKING DICTIONARIES is on the verge of becoming not only a TECHNIQUE in its own right, surer of itself, of its resources and its limitations, but for certain authors, if not a SCIENCE, then at least an APPLIED SCIENCE.[92] This transformation is essentially due to the evolution of the linguistic concepts to which dictionaries refer. Each lexicographical work reflects a linguistic theory which the author more or less consciously applies. In most cases, the theories which inspired the author were those in vogue at the time of writing the dictionary, but every outstanding work bears the mark of the latest or most up-to-date ideas (contemporary research has been trying to find this mark, cf. Quemada 1968). Thus in the 19th century — the dictionaries of Grimm or Littré are a faithful representation of the language which Romantic linguistics had just opened up — a prevailing taste for accumulating unusual details, a will to 'explain' each of these by reference to history, the eagerness to take into account the WHOLE language together with the desire to apply normative and often delicate distinctions. A great number of works from the present century will continue to get their inspiration from this period, either directly by appealing to historical linguistics or indirectly by taking as their models the great dictionaries of the past. However, from about 1960, others have marked a turning point — will it be decisive? — in the series of lexicographical achievements by deliberately taking inspiration from the methods of contemporary structural linguistics. We will deal with each of these two aspects later on.

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concordances published by these authors (Liège since 1962), by B. Quemada (Paris since 1963) and A. Duro (Florence since 1967). See also for a problematical aspect P. van Buren 1967–68.

[92] The reader is referred to the works of several specialists who still hesitate to give their opinion on this point: — 'arte de componer diccionarios', Casares 1950; — 'arte di compilare i dizionari', Migliorini 1946[2]; — 'the writing or compilation of dictionaries, which is a special technique rather than a branch of linguistics', Ullmann 1951:64. And see entries 'Dictionary' by C.T. Onions (in *Chamber's*) and 'Lessicografia' by B. Migliorini (in the *Encicl. Italiana*).

6.1 *Historical Lexicography*

It is impossible to neglect historical lexicography by a mere reference to traditionalism because it represents the most important part of the lexicographical works of our time. The lexicographical achievements of the 20th century were first renowned for their continuation of the tradition of the great historical dictionaries whose origins, for the most part, go back a long way in the past. It is only during the last 50 years that the great lexicographical undertakings could indeed be completed and they are far from being completely finished. According to this faithfully preserved model, other works have recently been initiated.[93] Because of the ever present lapses of time necessary for the preparation and publication — this seems to be an inherent defect of this type of work — these realizations continue to perpetuate a certain number of lexicographical concepts and traditions which began in the 19th century.

It is well known that the movement started in countries with a Germanic linguistic background. After the manner of the *Deutsches Wörterbuch* which was initiated by the Grimm Brothers as early as 1852, England in 1857, the Netherlands in 1864 and Sweden in 1893 began to be interested in the historical repertory of their national vocabulary. At the beginning of this century, these works were far from being finished, but parts of them, which were already published, prompted other Scandinavian countries to undertake, on a similar basis, the preparation of their own dictionaries (cf. Hjelmqvist 1896). V. Dahlerup published, as early as 1918, the first part of the Danish repertory and in 1911 the Norwegians decided to collect the records of their language; because of insufficient funds, the work did not start until 1921 under the direction of R. Iversen. Though the historical repertory of the Dutch language prepared in Leiden still requires many years of work (the first part came out in 1882 and the present-day editor F. de Tollenaere believes that this work will not be finished before the end of this century),[94] three of these important dictionaries have been completed during the last ten years. The famous Oxford Dictionary, *A new English dictionary on historical principles*[95] was the first complete publication (from 1884 to 1928). It was considered with good reason to be the prototype, par excellence, for a great modern historical dictionary. Sir James Murray, whose name was closely linked to the dictionary, wrote half the entries himself from 1878 to 1915. Comprising more than 15,000 pages divided into 10 volumes, it is unquestionably the most ambitious lexicographical work published before 1930;[96] a Supplement compiled by

[93] We can judge from a detailed examination of the prior works which J. Casares listed (1950:247–62) on the eve of undertaking the preparation of the Spanish dictionary.

[94] Cf. F. de Tollenaere 1968:71–3. We would like to thank our colleague F. de Tollenaere for his precious advice which he so kindly gave us on the lexicographical achievements in the Germanic and Scandinavian languages.

[95] This work is known under various titles: *NED* (*New English Dictionary*) which is in a way its real name; *OED*, proposed in 1895, *O* standing for *Oxford* (after the place of the edition); *HED*, suggested without much success with *H* standing for *Historical:* this would have emphasized its salient feature.

[96] Certain details throwing light on the principles and the method, the plan, and the details of how the work was done are to be found in the preface of Volume I and of the Supplement of 1933.

Murray's associates, Craigie and Onions was published in 1933 and since, a periodical bringing the new lexical features up-to-date has been published.[97] The Danish dictionary, *Ordbog over det danske Sprog* (*ODS*), perhaps because it covers a relatively shorter period (from the 17th to the 19th century) has been written and published in half a century. Initiated in 1900 by V. Dahlerup, the 27th and last volume completed by H. Juul-Jensen was published in 1955. But the one which took the longest time to complete is unquestionably the Grimm Brothers' *Deutsches Wörterbuch* (*DWB*) which, although started before all the others, did not come to an end until 109 years later; no doubt its completion was due to the energetic direction of Th. Frings who was helped by B. Beckmann. In 1961, fascicle no. 380 was published, which completed the 32nd and last volume of this monumental work.[98]

With the exception of France which, before 1900, was already in possession of a fairly vast analysis of its language with Littré's Dictionary, supplemented by Godefroy's *Dictionnaire de l'Ancien Français*, — the other countries with a Romance linguistic background undertook, towards the end of the 19th century or during the first years of the following century, the preparation of their national dictionaries. However, none of these has materialized; the work, which was already slow, has been questioned as well as the methods that have been used. These new preparatory studies often took considerable time.

Because of their definitive concept which was more recently worked out, the diachronic 'Thesauri' of the Spanish, Italian, Rumanian and French languages could be considered more as 20th century works. They retain the essential traditional features: the national language is treated from its origin to the present day according to a single vertical cut emphasizing the part played by the written language; each word forms a whole very rich in meaning and varied in usage which can be analyzed independently of the rest and can be compared to a living autonomous unit with its own independant existence — birth, life and death. But on the other hand these 'Thesauri' include a new and important methodological arrangement: the preponderance of literary sources is better balanced if they can be combined with a wider and more diversified array of documents; the words are treated more objectively within their context independently of academic criteria or moral or aesthetic norms which previously prevailed; the organization and the evolution of meaning are finally observed with still greater care, through the progress made by completed modern etymology. This transformation which practically does not change the general trend of the oldest realizations is developing mainly along the lines of an undeniable methodological

[97] One of the characteristic features of the *NED* is that it gives a considerable importance to research data. They were gathered mostly by a very large group of volunteer workers (several thousands, and 800 between 1897 and 1881 only). In *The Periodical* (Autumn and Winter 1958, Spring 1959), lists containing words for the letters A, B, ... are to be found for which earlier evidence was required than that of a date given for the new edition of the *Oxford English Dictionary Supplement*.

[98] This one had hardly been completed when the authors decided in 1963 to reorganize the first volumes, by the Grimm Brothers themselves, in order to cope with the disparities between the older and the more recent parts. Cf. also F. de Tollenaere 1965.

improvement. This had already characterized the 'Germanic' dictionaries in the course of their slow elaboration. All these great lexicons suffer from a lack of unity of conception and method; this unity can be maintained at the utmost over a period of 25 or 30 years, but certainly not over a century.[99] It is really because of the serious deficiencies which have been observed in the course of this evolution in the older part (A-F) of Grimm's Dictionary that the German Academy of Science decided, in 1963, on a reappraisal. It can be assumed that such a revision will produce more than just an additional section that could be included in the first edition. It could certainly constitute the first part of a new historical dictionary even more important than the previous one.[100]

Before the end of the 19th century and for the third time, the Rumanian Academy had started to prepare a historical dictionary on a large scale.[101] This new attempt, entrusted to Sextil Puşcariu gave no results: in 40 years he wrote only half of the dictionary (vol. A-B was published in 1913, C came out in 1940), i.e. the lexicographical concepts which inspired the beginning of the work were applied as far as the letter L. The elaboration of the dictionary was continued in 1948, after the reorganization of the Rumanian Academy, by several University teams (Bucharest, Cluj, Iassy). The new methodological principles have been adapted — as much as possible — to contemporary lexicographical requirements without sacrificing the overall unity. But, like the editors of Grimm's Dictionary, the new editors of the Rumanian Dictionary decided to initiate as soon as possible after the publication of the last volumes, the revision of the first part of the dictionary.[102]

As far as Spanish was concerned, the situation appeared rather different. Those who prepared the *Diccionario de Autoridades*, republished after the 18th century by the Real Academia, had wanted to incorporate a particularly large number of examples from famous 16th and 17th century authors; the work which was expected to be used

[99] The editors of the Danish dictionary maintained that the period of 31 years — publication time of the *ODS* — was too long when the evolution of the language and the concept that one had of it were taken into consideration. *Ordbog over det danske Sprog* XXVIII. *Liste over Forkortelser*, m.m. 107 (1956).

[100] 'Als erster Teil eines in sich gleichartigen neuen Gesamtwerkes' *Brüder Grimm Gedenken* (1963). Gedenkschrift zur hundertsten Wiederkehr des Todestages von Jacob Grimm (*Hessische Blätter für Volkskunde*, Band 54), p. 233.

[101] The Rumanian Academy had already seen many previous failures (the Laurian, Massim, Hasdeu and Philippide's plans). These various experiences were nevertheless very useful for the preparation of a really scientific dictionary. The attempt by Hasdeu 'to impose a judicious concept that the lexicographical work should follow, theoretically speaking, all the material offered by our national language, starting with the first attested linguistic facts right up to the contemporary period including the living language such as it exists in the normal everyday relationships between all the different sections of the population. It is this breadth that makes our academic dictionaries superior to other similar works by other academies, which have let themselves be influenced and continue to be influenced by traditional purist criteria etc. The result is that an important number of words of high frequency in the living language are eliminated' (I. Iordan 1966:427).

[102] 'In this way research workers will have at their disposal a general dictionary of the Rumanian language, answering the needs of present-day lexicography', "La linguistique roumaine des deux dernières décennies", *RLing* 11.434 (1966).

as a 'dictionnaire d'usage' had assumed another character — an historical value — which was not deliberate but nevertheless real. It was not satisfactory, but this was not realized until much later. In 1914, the Spanish Academy in its turn formulated a plan similar to that of the Oxford dictionary and it started to collect the necessary data. The first two volumes only — A to C — were published in 1933 and 1936. They gave an idea of how the work had been carried out. After the civil war, the dictionary was criticized from the point of view of method and thoroughness and was discontinued. Since 1946, M.J. Casares had been in charge of the Seminario de Lexicografía created under the Academy's patronage, and he was given in 1948 the responsibility of the preparation of the new *Diccionario histórico de la lengua española.*[103] With the help of R. Lapesa, S. Gili Gaya and S. Fernández the work has begun again with new vigour: It will consist of 15 volumes of about 1200 pages each and should be finished about the end of this century.[104]

It was not until later that the need and the idea for a far-reaching work was felt in France. We have said that Littré's Dictionary for the 17th and 18th centuries and Godefroy's for the preceding period could still be satisfactory to many scholars, but the development of historical and philological knowledge, at the beginning of this century, had been emphasizing their deficiencies more and more. As early as 1936, without the plan to write a dictionary, but merely with the intention of grouping all data which might be useful for an improved historical knowledge of the French vocabulary, Mario Roques undertook to make the *Inventaire général de la langue française.* But it was more precisely because of the general interest aroused around 1950 by the new publication of Littré's Dictionary (was it to be published just as it was, should it be completed, or rather should the preference be given to a new dictionary of the French language?) that the definition of a historical dictionary corresponding to present-day knowledge was questioned. An international meeting in Strassburg in 1957 defined the needs which a 20th century historical dictionary should fulfil.[105] These reflections gave birth to the planning of a far-reaching work whose breadth is still unknown. The preparation was begun in 1960 under the direction of P. Imbs. What is new in this *Trésor de la langue française* will be essentially due to the exceptional richness of research data it contains and to the minuteness of the analysis which these data will make possible.[106] This work will more or less respect the classical methods and at the same time take advantage of the results of the most recent works of historical semantics and the development of French lexicology (cf. Imbs 1965). The programme of the 'Trésor', specified that this work will not only provide precise informa-

[103] J. Casares has discussed these theoretical and practical problems in his very important *Introducción a la lexicografía moderna* (1950) to which the reader may refer should he require further details.

[104] Cf. Lapesa 1961. The Academy distributed in 1961 a sample (Muestra) of the entries A and B. The dictionary has been appearing regularly since 1958.

[105] The Records of this Meeting were published in 1961 under the title of: *Lexicologie et Lexicographie françaises et romanes, orientations et exigences actuelles.*

[106] 250,000,000 uses taken from the data of 2,500 texts of 100,000 words, that is, 30 times more than the figures announced by the Spanish editors.

tion on the origin and the evolution of present-day word-meaning but will comprise the whole vocabulary of the every-day language such as it was used in different periods of its history, from its origin to the present day. References will be classified according to chronological order corresponding to the first appearance of word and meaning, and to their 'birth' and 'death'. With the help of many research-workers, continuity or discontinuity in word usage will be indicated according to the variable distribution of frequencies which appear in the enormous analyzed corpus. The *Trésor* will be more than a dictionary of the different uses of French: first of all, it will have an historical conception defining each word, each meaning, each use in relation to its previous existence. It will also show that such and such a word or meaning has appeared in a particular context from which it has received a certain type of 'toning', which has consequently allowed its use to spread over into wider fields. Thanks to the subtlety of its general data, the *Trésor* should be in a position to show what, through all the stages of its development, distinguishes one word from another with respect to form, meaning, 'stylistic' shades and 'syntaxical' uses. Here again, in order to meet the practical needs of those who use it, the alphabetical classification of entries has been selected, against the advice of the many specialists whose opinion was sought. For practical reasons, the *Trésor* will be presented in two dictionaries — a dictionary of former times (from the origins to the third part of the 16th century), and a dictionary of modern times (from the third part of the 16th century to present day). It will consist of approximately 20 volumes, 8 for the first period, 12 or 15 for the modern period. In order to speed up the publication of the 'Trésor' each dictionary itself could be divided into 'period dictionaries', i.e. a 19th–20th century dictionary, a 17th–18th century dictionary, a middle French dictionary etc.

Italy, which was the first to possess a huge dictionary of the living language illustrated by literary references, is nowadays the last country in Europe to undertake a historical repertory on a large scale. Taking into account the current experiments, this delay should be to its advantage, and it could consequently avoid the risks which characterized most of the previous undertakings. The last edition of the *Dizionario della Crusca* began to appear in 1863. The publication was suspended sixty years later when the letter O had been reached. Methods in use were considerably out of date and the new editors were not prepared to carry on the work in the same way. After many years of discussion about the advisability of a complete revision or of a new work on a different basis, the latter was chosen (cf. Pellegrini 1957; Pasquali 1957; also Nencioni 1958 which precisely defines the works which should be undertaken for the new historical dictionary of the Italian language). Under the direction of B. Migliorini, M. Nencioni and A. Duro, preliminary work began in Florence in 1964, using in particular the most modern methods of text analysis.[107] The works which are quoted below are those which offer some particularly remarkable features, the first

[107] At the end of 1966 the Accademia della Crusca published a photographic sample of its documentary processes and in 1967 and 1968 two typical concordances (*Inni Sacri* by Manzoni and the *Novella del Grasso Legnaiuolo*).

of these being the wide range of these works. But many other achievements are also worth mentioning, as for example the *Royal Irish Academy dictionary*, the publication of which was started in 1930, or the *Dictionnaire historique du grec moderne, langue commune et dialectes* (4 volumes already published) which is being prepared by the Academy of Athens. Of particular importance are the 4 Swiss vocabularies, work on which started in 1900, and whose publication has been in progress for about 10 years.[108] Often wrongly presented as descriptive inventories of dialectal words, they are really thesauri of lexicography based on the most recent results of the dialectological methods which regroup very rich historical material and make a very important contribution to the knowledge of official and literary language.

6.2 *Theoretical Lexicography*

At the same time as the slow methodological evolution noted in the great previous lexicographical works took place, a new way of dealing with the problems and methods raised by dictionary making was developing. This will be called THEORETICAL LEXICOGRAPHY in this survey. It opened up a new field for reflection in as much as we can say that the lexicographers of the preceding centuries have practically left untouched all the results of their research.[109] It was not until a relatively recent date that an official exchange of ideas, which will no longer be questioned, was established between dictionary makers and philologists or linguists interested in vocabulary, thus making lexicography one of the preferred fields of study of the more recent applied linguistics. It seems today that modern dictionary making could be a linguistic work capable of describing a language through a lexical approach, independent of modern techniques, which allow the mastery of a huge amount of general data. This agrees with the saying that good lexicology will ensure good lexicography. This general movement which has been in progress for 20 years today touches on all present-day lexicographical works. The main aspects are:

'*Le fait dictionnaire*': it was under this title that M. Cohen set down the principle of a two-fold study of the repertories. The history of such intellectual tools had to be explained at the same time by presenting their linguistic and sociological aspects[110] as well as their definition and their general typology. In fact, a philological interest in old dictionaries had been shown to exist before the First World War, but since 1930,

[108] In particular the *Schweizerische Idiotikon*, the *Glossaire de la Suisse romande* and the *Vocabolario della Svizzera italiana*. See also Prado Coelho (1959) for the dictionary of the Academy of Portugal.

[109] Apart from the prefaces which we must accept for lack of something better — and we know how succinct they are on all the delicate points — and despite the great past of European lexicography we can only quote Littré's famous Mémoire (extract from a lecture), *Comment j'ai fait mon dictionnaire* (1880). See also: 'I think it is time to take up a systematic study of the lexicological principles which ought to be followed ... Curiously enough, this question seems to have interested few linguists' (Knudsen and Sommerfelt 1958:98).

[110] Cf. *PICL* 9.497–503.

there has been a new revival of interest: the research workers of every discipline are becoming increasingly aware of the need to have recourse to lexicographical data in a more exacting, systematical and better ordered light.

Thus, the first descriptive and critical bibliographies of dictionaries have been appearing for 30 years. The incomplete lists of the last half century have given way to much wider inventories (Besterman 1943) . Often they were carried out by specialized bibliographers like Collison, Holmström, Zaunmüller or Zischka, or lexicologists, such as W. von Wartburg (1934) and B. Quemada (1968), when it is a question of more restricted fields (a specific language) and more detailed repertories.

In the same way, an additional tendency develops which brings to light the lexicographical works of former times: firstly by the reedition of the more important works of previous times; some of these contain an historical and critical part or even a direct and exhaustive compilation of groups of older dictionaries, thus constituting real DICTIONARIES OF DICTIONARIES such as the *Tesoro lexicográfico* by S. Gili Gaya. In the same way, works dealing with the history of dictionaries, their problems and their methods have become more frequent. They lay stress on either wide national historical layers of vocabulary (Hulbert, Löfstedt, Mathews, Quemada, Seche), or on more specific problems: relationships and influences between various works (Viscardi), different lexicographical schools (Gallina); likewise, these studies aim at a better knowledge of a particular work (Wexler) or a particular element (Osselton). This trend can do nothing but increase in the coming years if one takes into account the current works and the programmes announced by some research centres.[111]

Lexicographic methodology has made great headway since the end of the last war. Every country, according to its situation, traditions, its own past achievements or future plans, gave a particular place and trend to this methodology. If the example of bilingual dictionaries has more particularly attracted the attention of the Scandinavian or Rumanian lexicologists (for example see Breban 1957, 1965; Iliescu 1957; Iordan 1957; Kelemen 1957, 1967; Levitzky 1957), the problems raised by the preparation of great historical dictionaries[112] or functional descriptive dictionaries — as contemporary linguistics helps to define them — are now being dealt with almost everywhere. The limits which the dictionary should determine according to its aim, were already preoccupying W. Krauss in 1945 (1946) and J. Dubois has more recently returned to this problem (1967b). As for the relation which semantics should have to lexicography, it has often aimed at perfecting definitions (see Møller 1959; Kukenheim 1959; Tollenaere 1963b; Lundquist 1966; Wahrig 1967) and more generally a great number of authors are worried about the consequences that new linguistic concepts and the technical improvements could have on the completion of future dictionaries.

[111] In particular by the *Centre d'Etude du Français Moderne et Contemporain* of the French CNRS (Centre National de la Recherche Scientifique) which devotes a part of its activity to a critical and systematical presentation of French dictionaries since their origin.

[112] In particular it is the case of Casares's monograph *Introducción* (1950), the theoretical base of the Spanish historical dictionary and of the collection of *Lexicologie et lexicographie française et romane* (1962) with the contributions of Baldinger, Guiraud, Imbs, Matoré, Quemada, Robert, Schalk, Vidos, etc. aiming at defining the *Trésor de la langue française.*

6.3 *Contemporary Trends*

By placing 'conceptual dictionaries, dictionaries of usage, their nature and form' as one of the subjects of the 7th Congress of Linguists (Cambridge, 1952), the organizers emphasized the double trend of the methodological renewal of present-day lexicography. The close links that the latter was about to establish with linguistics could only favour a single series of repertories, the DICTIONARIES OF USAGE,[113] either general or specific, such as the dictionaries of synonyms, antonyms, phraseology. The dictionaries of the encyclopedic type sometimes called universal were largely developed during the preceding century. Their authors were only too ready to accept extra-linguistic matter, but the dictionaries could not be considered in the same light.

The DICTIONARY OF USAGE is conceived as a linguistic description of a rather particular type, if the linguistic system is to be grasped in its lexical aspect. The essential postulates of 20th century linguistics, associated with the various results of lexicological analysis have altered the ideas. These had been established by the preceding achievements which are still in use more often than not because of tradition. We will note the two main aspects.

6.31 *Problems of lexicographical macrostructure*[114]

Spatial or temporal limiting of the dictionary nomenclature (synchronical dictionaries opposed to historical or universal dictionaries) and the general organization of lexical data (notional dictionaries being preferred to alphabetical dictionaries),[115] are the two points which have been more particularly reappraised in the course of the last 20 years.

6.311 *Diachronic lexicography and synchronic lexicography.* It took a long time for the synchronic approach to be taken up by dictionary makers, despite the fact that the tendency to universalisation had been becoming more and more important since the beginning of the 19th century and was a guarantee of quality. The need to adopt this new formula had attracted the attention of Murray's fellow-workers and as early as 1920 they did not think it would be possible to completely revise the Oxford Dictionary by employing the same type of method that they had used to complete it.[116]

[113] 'The conceptual dictionary as well as the dictionary of usage refers to a system of linguistic expression. This system of expression, as a rule, is that of a spoken language. These works embody in their presentation of linguistic material parts of this system of expression. Both types of dictionary aim at practical goals, the dictionary of usage exclusively, and the conceptual dictionary combining with the practical task the theoretical investigation into the nature of linguistic expression and into the thought-content on linguistic expression' (Mezger 1956:77).

[114] On MACROSTRUCTURE and MICROSTRUCTURE in lexicography, cf. Baldinger 1960.

[115] Some critical analysis also deals, in this same category, with various other problems which are familiar to lexicographs: choice and homogeneity of the recorded vocabulary, place given to norms, part of current regional and social languages, of slang; range of the overall recorded lexical data (current words, rare words etc.).

[116] In Craigie's opinion, something else needs to be done: 'To my mind the future of English lexicography lies in concentration upon special periods and sections of the language, so that each of them

Twenty years later von Wartburg, the author of an extremely important historical undertaking (1939) defined the new principles inspired by the theories of Humboldt's and Saussure's followers on the structure of vocabulary (see above 3.46). This work is considered as a vast entity whose parts are linked, reflecting a universe which it describes: 'within this entity, there exists a certain number of fields corresponding to a clearly defined part of the universe; inside these fields, the different elements of the vocabulary form a coherent and organized group (Wartburg 1963:189–90). Under these conditions, the first type of scientific dictionary to be written should illustrate the system of expression, which is the vocabulary of a language, and bring out the internal economy of the language. It should contain all the words in use without starting from a predetermined selection as previous works had done.[117] A direct connection is established between the clear-cut limits of the system and the period of time covered by the dictionary. Wartburg set out theoretical and rigorous demands which were sometimes very difficult to put into practice: reducing each section to as short and as limited a space and time as possible, considering each level of language of each author as a unity in itself and even dividing (in order to oppose them) the different periods in a great writer's life when it has been long and productive. Not being able to be as rigorous as possible in the concrete practical application, we have to admit, as a basic rule, the fact that no descriptive dictionary can take into account more than 500 years of language and that it must take into consideration shorter periods of time that can be chosen with reference to important historical events.[118]

Such views have brought about many changes in research programmes which have been carried out during the last 25 years. New lexicographical and comprehensive works are being added to the ever accumulating number of inventories concerning the vocabulary of a particular author[119] or field or technique in relation to a precise

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may be dealt with more fully than is possible in a comprehensive work, even though this is on the scale of the Oxford Dictionary'. Lecture of the April 4th, 1919 (cf. Craigie 1941). In the historical dictionary that he suggested, it was impossible to consider a vertical section as a unique possibility. On the contrary it used many horizontal cuts. For English, Craigie had in mind five dictionaries corresponding to five distinct linguistic periods. Cf. *TPS*, 1925–30, 6–11, and Craigie 1937.

[117] This was the case for the old philological GLOSSARIES, which covered only the difficult or out of date words. This is why the method adopted by E. Huguet has been condemned (publication date 1964). Huguet was content with taking the words with their form and their meaning when they no longer existed.

[118] As an example, Wartburg made a list of the chronological division which an over-all descriptive French dictionary should respect. He used as a basis the documents concerning the evolution of the language: 1. The oldest texts (before the Chanson de Roland). 2. Since about 1080 until the middle of the 14th century. 3. From the middle of the 14th century to the Italian Campaign of Charles VII. 4. From Charles VII's Italian Campaign to the arrival of Malherbe at the French Court (1605). 5. From Malherbe to the death of Louis XIV (1715). 6. From the death of Louis XIV to the beginning of the French Revolution. 7. From the Revolution until the beginning of the first World War. This sectioning involves many problems which need to be discussed. An indispensable addition is to be found in Wartburg 1963.

[119] Any linguistic bibliography provides information on this point. Cf. in particular Wartburg 1963[2]. Research suggestions in the collection '*Où en sont les études de français*?' (ed. Dauzat, rev. Ch. Bruneau 1935–49) will give some idea of this movement in French. A new importance has been given

historical or geographical situation or event (Febvre 1954; Febvre and Hauser 1939; Hollyman 1957; Matoré 1951; Proschwitz 1956; Quemada 1955; Wexler 1955). In line with the great historical works yet unfinished, most European countries have started work on repertories of a more restricted nature, but which are scientifically more ambitious.[120] Compared with the great undertakings of the past, this last solution seemed to be destined for success and the results have already proved this to be so. This solution combined the economical and practical advantages of a rapid realization and a more convenient presentation with the more scientific advantages of a more coherent and homogeneous methodology.[121] A general historical dictionary can be imagined for languages which are not widely spread and have a comparatively poor literary background. This type of dictionary no longer can adjust itself to languages with a great cultural background, such as Italian, Spanish, English, German or French. By dividing up the period under consideration into a succession of time cuts, the definition of the corpuses to be used as a reference point will be much easier. The amount and quality of the data will become more representative. Thus the extreme difficulty which the lexicographers encounter when they want to give an 'historical' treatment to the whole of the vocabulary, will be considerably reduced.[122] Thus Craigie, after having just completed the *Oxford Dictionary*, set about completing some of the partial repertories he had outlined: *A Dictionary of American English on Historical Principles* (Craigie and Hulbert, I (1938), IV (1944), 2nd ed. 1960) and *The Dictionary of the Older Scottish Tongue from the twelfth century to the end of the seventeenth* (vol. I, 1937 — continuing publication, the letter M was reached in 1967).

A great number of other works which have been undertaken in the course of the last 25 years, have adopted the same views.[123] In Germany, two undertakings have

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to dictionaries of authors. Besides more traditional works such as F. Ruiz's dedicated to Fernández de Moratín (1945) for example, lexicographical milestones have appeared, among which the *Goethes Wörterbuch*, which was carried out under F. Schadewald's direction (being published), is the most remarkable recent illustration. Some important works are in progress. See C. Dill 1959.

[120] This probably caused some discussion on the other side of the Atlantic: Fries started preparing one of the lexicons suggested by Craigie, the *Early Modern English Dictionary* (1475–1700); 5 million cards are stored at the University of Michigan. In the same University, S. Kuhn has accepted responsibility for continuing the publication of *The Middle English Dictionary* (they were up to the letter H in 1967). Amongst the many works in progress, it is useful to quote the ancient language repertories and in particular the Medieval Latin dictionaries intended to complete the *Thesaurus linguae latinae*, such as the *Mediae latinitatis lexicon minus* by J.F. Niermeyer (Leiden, since 1958), which covers the period 1150–1200; the *Mittellateinisches Wörterbuch bis zum ausgehenden 13. Jahrhundert* (Heidelberg, Berlin, since 1950), from the 7th century to 1280 for medieval Latin of the German area; the *Lexicon mediae et infimae latinitatis Polonorum* (Warszawa, since 1956); the *Glossarium mediae latinitatis Cataloniae*, from 800 to 1100 (Barcelona, since 1960).

[121] Even though the great Dutch historical dictionary is far from being finished, its editor F. de Tollenaere has recently (1968) tried to define the limits of the series of synchronic dictionaries which will have the same overall coverage. See also R.-L. Wagner 1967:143–6.

[122] Wagner 1967 shows that for important sections of the vocabulary (a third of the entry-words, in particular the usual vocabulary) the so-called historical entries are not in line with the general plan suggested by the traditional works.

[123] For the Frisian language, for example, three dictionaries are actually being published. The OLD and MIDDLE Frisian have been prepared by W.-J. Buma at the Groningen University. The MODERN

covered both the older period (Frings and Karggasterstäd 1952–. Through *byws* 1968) and the more recent period (Klappenbach and Steinitz 1961–. Through HUT 1968). In Denmark, the material necessary for the preparation of a dictionary of old Danish has been in the process of being gathered since 1950 (by K. Bom, the former editor of the great Danish Dictionary, under the title *Ordbog over det aeldre danske Sprog*). In Norway, the dictionary of the old language *Gammelnorsk Ordbok*, is on the verge of being published (A. Holtsmark). In the same way, apart from its general works, the Rumanian Academy published in 1935 two very important partial repertories, the *Dicţionarul limbii române literare contemporane* (4 vol. 1955–57) and the *Dicţionarul limbii române moderne* (1958), the latter being more complete than all previous works. In its turn, the Accademia della Crusca and its foreign associates are ready to prepare repertories of old Italian[124] which will be part of the more succinct future historical vocabulary and it is well known that the *Trésor de la langue française* was considered as a collection of works intending to complement one another rather than to form a single dictionary.[125]

The realization of such repertories will not proceed without presenting more difficulties. It is obvious that the a posteriori superimposing of such heterogeneous lists will raise a number of unforseeable problems, but these should not remain unsolved for long.[126] A period dictionary recording a large amount of linguistic data spreading over four centuries cannot obviously claim the right to be a synchronic presentation of language sections. Recent and more ancient words will appear side by side in the inventory, but out-of-date words will not be included as before. The distribution of the texts on the outer limits of the periods which were chosen as the basis for the division into different volumes will necessitate an arbitrary choice. This problem could only be reduced, if not eliminated, by a very detailed analysis. There will of necessity be much overlapping between dictionaries; in order to have continuity, the discontinuous facts need to be noted for the same reason. This will doubtless involve a certain 'heaviness' in the presentation and it will not be easy to consult. Finally severe normalization measures as well as numerous arrangements for a synthetic approach are necessary for the introductory work. It is only in this way that the work will be economic and have the required coherence.

The chronological cuts adopted by the works already quoted involved serious difficulties which had to be overcome. In theory each one is supposed to cover a given language span. But we must acknowledge that all the present-day research workers have not been able to achieve their aim of precisely limiting this 'language span'.

Frisian dictionary (1800–1950) was undertaken by the Frisian Academy in 1939. Today, all the indexing has been finished.

[124] This *Trésor de la langue des origines* is intended to cover the death of Boccacio. It was prepared in Florence and benefitted from the collaboration of outside centres such as that of the University of Utrecht.

[125] P. Imbs (1960), in charge of the *Trésor de la langue française*, has suggested some solutions.

[126] The sections (roughly speaking: generations) suggested by G. Matoré (1953) were not intended for lexicographers.

Neither the morphological criteria on which historical grammar is based, nor inferred criteria from the formation of words are sufficient. The reference points supplied by extra-linguistic data (each new socio-contextual situation gives birth to corresponding neologisms) are much too changeable and unreliable to be used as such. R.-L. Wagner in a speech supporting synchronic dictionaries (1967) suggested starting from an analysis of the lexicon itself and co-ordinating the data supplied by the over-all history of the vocabulary (creation and disappearance of forms and meanings, confusion in distributions and frequencies of use). The amount and the nature of the information provided will imply lexicological sectioning which could be more surely adopted as lexicographical sectioning.

In order to understand more clearly the synchrony and to define more rigorously linguistic habits that they were going to describe, J. Dubois and his team for the *Dictionnaire du français contemporain* (1966) turned to direct sociolinguistic criteria. They chose the everyday language which was used by the people speaking and writing French at the very moment at which they wrote their dictionary. For a more reliable representation, the authors are themselves the witnesses of this current usage. The literary language which had previously held the place of honour was rejected. The quotations are not taken from great authors of the past, but are phrases which have been recognized as usual and frequent by the speakers who know the language norms. Nevertheless, the dictionary makes reference to the different registers when need be, and includes the appropriate references for careful speech and common usage. The technical terms which are included in the *Dictionnaire du français contemporain* are those used by an average man with a normal cultural background which has been acquired by reading newspapers and other current reading material. The traditional nomenclature, which is perpetuated in the so-called 'modern' dictionaries by the normal procedure of including the past heritage, has been considerably lightened by the elimination of all the words which are only used in dictionaries. The proportions of the lexicon, which is represented, are thus limited to approximately 25,000 words. More precise methods of analysis and description were able to be adopted as the material was collected according to more rigorous principles than those of the past. All this tends to make the synchronic dictionary the prototype of the linguistical dictionary of today.

6.312 *Notional lexicography.* The alphabetical classification of entry-words is one of the methodological elements of traditional dictionaries which is mostly referred to by 20th century lexicographers. The discussion of principles has always remained open, but since the first ideological repertories were published in the middle of the last century, the momentum has existed, but it has especially increased over the last 20 years. This discussion is still far from being over if one takes into account the more recent rumours (Baldinger 1960 answering de Tollenaere 1960a-b; and reappraisal of the question by Hallig and Wartburg 1963: Preface). In fact, two different but closely related problems are intermingled: those which are more directly raised by IDEOLOGICAL

DICTIONARIES and those which exclusively affect CONCEPTUAL DICTIONARIES.[127] The arguments which we are most interested in here are those which concern the latter. Only this type of dictionary can claim to be based on theoretical principles. The former has always had only practicability as its principal aim. The elaboration of these two types of dictionaries underlines their dependance on their origin and accounts for the corresponding confusion.

Thanks to Roget's *Thesaurus* and the French amplification by Boissière, THE IDEOLOGICAL DICTIONARY was not long in developing — despite certain opposition — in the principal European countries. Before 1900, all these countries were in possession of their own repertory. They all had been inspired by the same source, but they were not of equal value. In certain languages, it was noticed afterwards that there had only been a tendency to simplify previous works of analysis (no doubt in order to make consultation easier as was the case in French with Maquet's Dictionary); in some other languages, the tendency has been the opposite and there have been attempts at systematization. Germany was the favourite birthplace of such works being once again under the influence — blurred for a while — of Humboldt's linguistics.[128] At the very beginning of the century for H. Titkin, for example, it was this approach that he intended to follow, in order to carry out what should be, in his opinion, the 'dictionary of the future'. He proposed the formation of highly qualified teams of specialists (Titkin 1910). A certain number of suggestions followed, but it was not until the publication of Dornseiff's *Der deutsche Wortschatz nach Sachgruppen* (1934, 1940) that an original and highly important work came out. It can only be compared to the Spanish *Diccionario ideológico* by J. Casares. The author had expressed methodological ideas, 20 years before the publication of his work[129] which surpassed by far all the previous *diccionarios de ideas afines*.[130]

These last two realizations show in various degrees a tendency which is much more scientific than that to be found in the previous ones though they might raise some

[127] F. Mezger, in his report to the 7th International Congress of Linguistics (1956) declared 'We avoid the name ideological dictionary on account of its political connotations; otherwise we should have preferred it' and he uses the term CONCEPTUAL DICTIONARY to indicate the same thing.

[128] The influence of the research by Weisgerber and Trier regarding the structure of the vocabulary has evidently played a prominent part at the time. See also Hiorth 1956.

[129] Cf. Introduction to the *Diccionario ideológico de la lengua española, desde la idea a la palabra, desde la palabra a la idea*, Barcelona 1942; 2nd ed. 1949; 3rd ed. 1951. In his *Nuevo concepto del Diccionario de la lengua*, Casares declared as early as 1921: 'Besides the current alphabetical repertory, "hermetical and inarticulated archives", the living organic dictionary will have to be created; this dictionary will suggest images and associations which in their turn will bring forth the idea, and the words which correspond to this idea will come forth bringing with them their indispensable train of synonyms, analogies, antitheses, and associations; this new dictionary could be compared to attentive librarians who by making methodical indexes open the way to the most bewildered reader, showing him infinite possibilities by revealing inexhaustible sources of information' (p. 117).

[130] Its reputation has been greatly enhanced by its ease of consultation. This repertory is made up of three parts: a usual dictionary, giving definitions of the meanings of the words, a list under 2000 headings alphabetically arranged, all the words connected with each heading; a synoptic part (as part one) very well thought out and organized.

critical observations.[131] Dornseiff in particular did not hesitate to declare that he had linguistic aims which could go far beyond the lexical 'facts' of German.[132] But like all the compilations of this type, they had to be practical in order to answer the very heterogeneous needs of the users. Useful tables, diagrams and lists, which are as complete as possible, are to be found in these dictionaries. With this end in mind, 'all' the words of the language have been included without any diachronic restriction or socio-cultural limitations. Because of this fact, these lists have no descriptive or functional value. The classifying systems which are adopted bring to mind, only too often, the arbitrariness of the preceding ones in the determination and the organization of categories, as well as in the order of presentation of the words included (about Dornseiff see Weisgerber 1951:65, Hallig and Wartburg 1952:79–80; about Casares see Wartburg 1944).

After these two attempts 20th century lexicography was only half-way along the road, as it were, towards the NOTIONAL DICTIONARY. A new hurdle was overcome with W. von Wartburg's *Begriffssystem*[133] which was elaborated with the assistance of R. Hallig (1952). For more than 20 years, the authors had brought to light the need to put aside the alphabetical order used for scientific dictionaries which were supposed to be based on the results of modern structurally orientated linguistic research (in particular by Wartburg 1939). The alphabetical order disturbs the functional lexical groups; in order to present these with coherence and reveal their internal organization, it was advisable to replace the alphabetical order by a system which could be modelled, as exactly as possible, on the particular 'state' of language described.[134] Naturally this new formula was in perfect agreement with the principle of the 'period dictionaries' recommended by the same author. We will not go into all the details and opinions to which Hallig and Wartburg referred (1952: Intro.). It is undeniable that besides the more or less direct influences of Humboldt's theories which appeared in Trier's or Weisgerber's works during the first half of the century, it is advisable to include Saussure's ideas on the system of ARTICULATION of the means of expression. Ch. Bally had al-

[131] In his report, Mezger 1956:79–80 points out that Roget has 6 classes, 24 sections, 1000 groups, while Schlessing's German work with its 6 classes, 27 sections and 1000 groups changes the number of the sections, whereas Bring's *Svenskt ordförråd* keeps only the number of the groups, omitting the classes and sections. The Dutch dictionary of Brouwers, *Het juiste woord*, has 10 classes, 41 sections, 1000 groups, and H. Andersen's *Dansk Begrabsordbog* has 100 classes, 20 sections, 829 groups, following the general set-up of Dornseiff, is divided into 20 sections and 906 groups. 'The fact that the groups amount to just one thousand, demonstrates the relative arbitrariness of the classification'.

[132] It is useful to note that Dornseiff, a classical philologist, had noticed in his works on the vocabulary of Ancient Greece that, to understand general lexical problems, one had to examine how the notions are expressed by vocabulary in modern languages. This is why he undertook this dictionary of present-day German. Cf. 5th ed. (1959) p. 5.

[133] The translated title is: *A system of concepts used as the basis for lexicography. A proposed scheme of classification.*

[134] A principle developed in his *Problematik und Methodik* ... 'Evidently such a system will not be the same for all periods as the image of the world and its expression is continually changing. The modifications undergone by the system will give an idea of the changes that have taken place in the spiritual and material life of a people' (1943:189).

ready applied them with a somewhat similar purpose in his *Traité de stylistique française* (1909). With linguistic and logical views that were more precise than those of all his predecessors, Bally considered the delicate problems of the determination and organization of word identification terms in a coherent network which allowed the classification of all corresponding particular language facts. In order to determine these terms, he used as a basis a simple operation of logical linguistics (*identification*) which connected the language fact with its logical equivalent, equating it with a simple notion: 'In logic this operation corresponds to finding a simple idea as an identification term which always corresponds to an undecomposable psychological element (concrete representation or abstract concept)' (Bally 1951, I:104). Gradually, a hierarchy of these IDENTIFYING TERMS is constructed, organizing particular notions under the wider notions which in their turn become part of even wider notions.[135] In passing, he suggested a great number of improvements to be introduced into the traditional ideological dictionaries which were often too artificial and too complicated: these notions often go hand in hand.[136] Wartburg often had recourse to these improvements for the determination of his LEADING CONCEPTS (Leitbegriffe) as well as the classification of details (Hallig and Wartburg 1963:Intro., 86, 91).

Much discussion followed the publication of the first edition of the *Begriffssystem* (1952).[137] The theoretical choices which Hallig and Wartburg justified at length in their very important introduction were generally welcomed with much interest but at the same time with serious reserves. Wartburg's ambition, which he declared in his introduction, only reinforced the debate and the discussion. Does not the classification system go further than the needs of a given language and imply the application of a universal system to the whole language whatever the time and whatever the civilizations it referred to? It was to arrive at this end that the authors avoided taking as a basis the concrete words of a particular language; this would have limited the range of the plan to a single vocabulary. The authors preferred to use as a basis concepts under which the words could be classified. The universal character of these concepts would be reinforced by the fact that only those which have their origin in pre-scientific knowledge would be retained, that is to say that this will be based upon the intellectual level of the 'average man'. It can be understood that for certain specialists, the

[135] He organizes for example, *Pity* and *altruistic feelings*, which in their turn are placed under *general feelings*, which then are classed under *activities of consciousness*; then these are opposed to the *phenomena* which are *external* to *consciousness*.

[136] Bally distinguishes special procedures to classify the concrete words according to their real, figurative sense (practically identical to that of the order of the material) which cannot be the same for abstract words and the natural associations based on the examination of the definitions (which imply a classification) will be looked for in these abstract words. For the setting out of each heading it is advisable to make the OPPOSITIONAL PAIRS stand out, giving them the same importance as the SYNONYMS or ANALOGIES. The expressions will easily take their place among the isolated words. The grammatical nature of the words gives a guide to their distribution because it helps much in recognizing the logical subdivisions. The ordering of the material will be done according to the principle of a progressive and imperceptible passage from abstract INTELLECTUAL expression to concrete and AFFECTIVE expression. *Id.*, I, 130–2.

[137] The summary can be found pp. 29–30 in the 2nd ed. Cf. as well de Tollenaere 1960a-b.

Begriffssystem does not ORGANIZE but only COLLECTS linguistic facts. It is not able to organize these facts because it is not a system built up from the language itself. It is a philosophical classification inspired by phenomenology. The authors in their introduction to the 2nd edition answered the most frequent criticisms carefully and prudently. This way they were able to point out even more clearly the essential character of their plan by adding desirable changes and making the overall system less rigid.[138] Today, it cannot be said that the debate is closed. What seems to result from it is the fact that if a NOTIONAL DICTIONARY (CONCEPTUAL) does not seem to be possible according to such principles, it would appear that general agreement cannot be obtained on the realization of the notional dictionary (conceptual) according to such principles if it is only because of the difficulties encountered in practice when consulting it.[139] On the other hand, the notional classification (conceptual) has met with sufficiently widespread acceptance to be used for many descriptive lexicological works.[140] It is perhaps by the multiplication of the latter that, in the near future, after more refined experiences, a renewed and more reliable lexicography will result.

6.32 *Problems of microstructure*

These problems concern more particularly dictionaries, whereas the former covered in a more general way the wider lexical description of all the dictionaries; this is no doubt why they do not attract the same attention in European countries. Only a few specialists, authors of dictionaries themselves, have made some contribution to the reappraisal of their former works. Unlike previously quoted authors, the specialists belong mostly to the Romance-language speaking countries or dedicate themselves to the study of Romance languages.[141]

6.321 *Definition of entry-words.* The efforts which were made to try and identify the 'word' unit as a linguistic sign, have not yet had much effect on the pragmatic good

[138] Cf. also R. Hallig in *DLZ*, 74.397–9, in answer to Dornseiff 1954. The questions they touch upon appear in the following order: 1. Should a dictionary be classified according to alphabetical or conceptual order? 2. The value of the concept as a basis for a classification system. 3. The classification itself. 4. The choice and place of the concepts in the classification system. 5. The universal value and the possibilities of use of the *Begriffssystem*. 6. The usefulness of the *Begriffssystem*.

[139] This is the point of view developed by an experienced linguist who cannot believe that a contemporary lexicographer is able to actually use the suggested system such as it is: how will he precisely class all the words according to such a general classification as that of the *BS*? Without experience he only too often has to decide for himself on the only too numerous examples of heretogeneous and vague meanings. By extending the classification, he will disturb its logic. Under these conditions, how can the user be able to find the words that he is looking for? Too much attention is attached to the index; where are the grammatical words and conjunctions etc. to be placed? All the categories must be of equal importance in a dictionary if the fundamental concept is to be retained, etc. Cf. *CLex* 2.25–9 (1960).

[140] Cf. footnote 44.

[141] Among the leading representatives of this group, French scholars hold a place of prominence. To the various quoted articles in the notes or the bibliography, the methodological work by M.-J. Rey-Debove can be added, *Etude linguistique et sémiotique des dictionnaires français contemporains* (1971).

conscience of all the lexicographers and these attempts did not produce any clear-cut overall results. Some new initiatives, whose systematical application was hindered by the need to facilitate consultation, are opposed to the old tradition which requires that written words are dictionary words par excellence. In certain authors, the recognition of WORDS and LEXICALIZED SYNTAGMS which is so delicate at any time, especially in Romance languages, is based upon modern syntagmatic analysis (semantic criteria or those of formal cohesion, of substitution, of commutation, etc.). According to its nature, the syntagm will be treated independently (with residual semic elements) or linked to one of its component parts (secondary entry-word).

The scientific application of the synchronic conception eliminates all etymological data and presents in a new light the organization of the various meanings which, until then, had been grouped under a single entry-word. Following certain suggestions, the frequency of use could replace the former classifications — as long as it is known in a precise way. More usually a subdivision of the traditional articles is preferred. The analysis of the statement shows that the combinative rules of the constituent elements offer objective criteria besides the etymological reference.[142] Certain trends in contemporary lexicography would accept modern methods for solving these problems of homonymy and polysemy.[143] Thus the group of derivatives around a base term becomes an element in the description of semantic content and, as such, contributes to the identification of the lexicographical unity to be defined. Because of the different meanings of the word, it can happen that the same base collects around it various different derivational series. The oppositions between the various groups of derivatives formed in this manner become the mark of semantic autonomy for the homonymic terms (as Godel 1948 had demonstrated). When traditional methods identified in French only one entry-word *bouton*, with reference to the common etymological factor, the *Dictionnaire du français contemporain*[144] distinguishes three entry-words for *bouton*, each of these being followed by their derivatives: 1. *bouton* (horticulture) –

[142] Thus Fr. *industrie* has, in the 18th century, two senses: that of Latin *industria* 'general activity' and the modern sense 'activity for the manufacture of products.' The old sense has only remained today as an archaism from which we have *industrieux* (literary = active, resourceful). The modern sense on the contrary is the only one in current use. It has a number of derivatives, *industriel*, *industriellement*, *industrialisation* and more recently, *désindustrialiser*. For the contemporary user, there exists not one GROUP, but two, clearly differentiated in their fields of use. The synchronic analysis implies the recognition of the two different BASES and must offer two lexicographical ENTRY-WORDS. Cf. *CLex* 10 (1967).

[143] The traditional resolutions (*voler*, for example, generally divided into two entries since the end of 17th century) were not sufficient. P. Imbs in 1960 was still deploring the approximate character of the methods used up until that moment: 'The most delicate problem is that of semantic differentiation brought about within the word and the crossing, at a particular moment of its evolution, of the threshold beyond which the word is no longer itself. How can one determine this threshold other than by a linguistic feeling which must never be refused, (...) but which must also and always be based on non-subjective criteria' (Imbs 1960:15).

[144] Paris, 1966. See the review by L. Guilbert, *CLex* 10 (1967) 115–9. A direct application of the theoretical views of its principal author J. Dubois will be found there. For Dubois, the WORD UNITY is defined by its use in the sentence (distribution) and by the semantic relationships that it has with its derivations (transformations).

boutonner (intr. v.). 2. *bouton* (dermatologie) – *boutonneux* – *boutonner* (intr. v.). 3. *bouton* (technol.) – *boutonner* (tr. v.) – *boutonnage* – *boutonnière* – *déboutonner* (*se déboutonner*) – *reboutonner*. The subdivisions employed in this dictionary are totally different from those previously used. The authors of this dictionary have been criticized for not carrying out their plan in all its details,[145] but this could be considered to be an advantage rather than a drawback.

6.322 *Dictionary entry and structural inventory.* Grouping derivatives out of their strict alphabetical order is one of the direct consequences of the analytical method recommended. Every BASIC LEXEME recognized in this way as being autonomous should have listed underneath it all its corresponding constructed words.[146] The presentation of such dictionaries brings to mind certain etymological groupings characteristic of 16th century lexicography, prior to the introduction of alphabetical organization of repertories which was so slow to meet general acceptance. But the important feature in the present case is that, while maintaining a conventional alphabetical order of the basic unities for practical reasons, a new and, in this case, entirely functional articulation has been added which places the words in terms of their living relations by reference to a given state of language. The two Scandinavians Sommerfelt and Knudsen had already given an answer in 1957 at the Oslo Congress: the structural method only could permit a classification of the meanings in a synchronical dictionary, but their demonstrations were not absolutely conclusive.[147] In more recent procedures, it has been proposed to organize the dictionary entry according to the pragmatic status of the word which is to be defined.

Extended to semantic connections, the systematic presentation of the networks of syntagmatic and paradigmatic relations which radiate from the word becomes the central principle of the description. The tendency is to replace, in part or in whole, the DEFINITION generally considered insufficient, if it is viewed as something other than a pragmatic and didactic activity accepted by the average user (non-linguist) (this presentation has supporters following Casares 1950, i.a. Knudsen and Sommerfelt 1958; Imbs 1960, Rey 1965a; for attempts to outline theory see Pottier 1965 and Rey-Debove 1966, 67a). A number of authors have been preoccupied by the imperfections of this presentation during the past decade. They have sought a means of improving

[145] 'As such it is an excellent method and it is a natural outcome when a morphological feature underlines a dividing sense feature ... because of a lack of a morphological, syntaxical, phraseological basis. Only the situations can show that these words each have two or three signs. The application of this very legitimate principle requires more careful perfecting.' Cf. R.-L. Wagner 1967:155–6, who brings forth some striking analysis.

[146] *Aigreurs* (derivative noun) is placed under *aigre*; *agrafer*, (denominal verb) under *agrafe*. It has been pointed out as a possible inconvenience the risk of not giving a clear idea of the importance of the derivatives (and even of their existence) in linguistic usage, and even ignoring the words which do not belong to the morphological or semantic unit.

[147] 'The synchronic dictionary ... would have to apply a structural point of view, distinguishing between primary and secondary meanings from a purely synchronic point of view', taken up again by Sommerfelt 1962:273. Cf. Y. Lebrun 1963.

the basic tenets of semic analysis (Wahrig 1967:2–4, 36–43). The results so far do not seem very convincing and we are forced to conclude — perhaps temporarily — that it is impossible to couple the demands of contemporary semantic analysis and the practical requirements of definition. R.-L. Wagner has suggested changes and 'reasonable' compromises (1967).

The structuralist lexicographers attempt, as far as is possible, to replace the definition by an enumeration of the series of correlations and oppositions in which every word unit is contained and which allows us to define it (double system of syntagmatic and paradigmatic structuring). Along with R.-L. Wagner and P. Wexler, J. Dubois was the first in France to demonstrate the effectiveness of these principles in certain cases.[148] The presentation of the dictionary in the form of tables and sets of internal references would be completely novel. Judging by the tables suggested, the old but never fully realized project for a contextual dictionary (without definitions) could thus begin to take form. On the practical level for each use of a word identified by one or several semes in its functional syntagmatic environment, the network of synonyms, antonyms and homonyms in which it is included will be indicated. The function of the latter is to make clear the dominant semantic feature of each specific use and at the same time to reveal the corresponding syntagmatic sequences.[149]

Presented in this way, the structural dictionary tends to satisfy the needs formerly expressed by E. Buyssens as to the necessity to bridge the gap existing between grammar and the traditional dictionary.[150] It is both a grammatical and a phraseological

[148] For the verb *passer*, he brings forth inclusive and exclusive syntagmatic constructions which define the term. He examines their distribution and traces their links with a semic definition which uses a system of binary opposites: "Recherches lexicographiques, esquisse d'un dictionnaire structural" (1962). As he envisaged even greater difficulties in presenting in a simple and clear manner the paradigmatic structures, he tried to give application models with micro-systems of paradigmatic oppositions: *matin/matinée, soir/soirée, an/année, jour/journée*. He concludes by saying that in numerous cases the paradigmatic representation is reduced to a simple syntagmatic representation of distributions: "Représentation de systèmes paradigmatiques formalisés dans un dictionnaire structural" (1964b). See also Meschonnic 1964 for a description which could offer another model for a structural dictionary.

[149] Certain authors would go as far as asking for the systematic representation of the series of collocations, cf. M. Cohen 1958. The *Dic. Fr. Contemp.* (Paris, 1966) gives the following as an example for *clair*, adj.: *Clair* 1. 'qui répand ou qui reçoit beaucoup de lumière', made precise by the synonym *éclairé* and the antonym *sombre* in the syntagm *salle claire* and made precise by the synonym *vif* in the syntagm *flamme claire*. *Clair* 3. 'qui laisse passer les rayons lumineux, qui permet de voir distinctement'; made precise by the synonym *limpide* and the antonym *trouble* in the syntagm *eau claire* etc. In passing it can be noticed that this dictionary defines the intensive value of the synonym (*affreux*, syn. *hideux*) or the weakened form (*abrutir*, syn. *abasourdir*).

[150] For this, he suggests the inclusion of all the information necessary on all the syntaxic possibilities offered by each word, the different places of these, the adverbs in particular, the synonymic exclusions. Cf. *PICL* 7.86. The structural dictionary gives the syntaxical structures of each word a primordial importance. It is this which directs the internal arrangement of each entry as it has been seen in the examples already quoted.

Recent monographs suggest studying a 'grammatical' word according to the grammarians' techniques without ever forgetting the lexicographer's problems. The techniques adopted are based upon an abundance of examples, the careful study of lexicalized segments, and a curiosity that touches the dividing line of grammar and vocabulary. Cf. R. Martin 1966.

dictionary and becomes an educational tool par excellence which offers the user the possibility of mastering the mechanics of word functions in their different linguistic contexts.

These experiences are still too recent to permit an evaluation of their success with the public.[151] It is only as time goes by that these works with so new a form and a content will be able to gain a large audience.

Will the established tastes of the great majority of people for para-encyclopedic works be overcome? Perhaps it will be necessary to find a new name which will eliminate all confusion? Whatever it may be, at the present moment these para-linguistic works are the subject of a very lively interest on the part of the specialists who are paying particular attention to the works of contemporary linguistics.

6.4 *Mechanized Lexicography*

This survey would not be complete without mentioning briefly the field where lexicology and technology meet, adding a new dimension to dictionary making both on the material and the methodological level. Over the last ten years, various experiments have been and are still being carried out to renew the manifold aspects of lexicographical work. This renewal has come about through the ever improved means offered by computers and their accompanying techniques. Going far beyond the now generalized stage of automatic or semi-automatic preparation of lexical data (see 5.), automatic devices have been used to analyse corpuses (statistical, morphological, syntagmatic analysis) in order to take out of the reference material, complete data which can be integrated into an 'objective' dictionary (choice of words, functional collocations, characteristic contexts etc.) (cf. Štindlová, ed., 1968; Delbouille and Grisay 1968: biblio.); these devices have been used to check a number of the stages of work of traditional dictionaries (normalization of the graphical presentation, the assigning of normative criteria and levels of usage, the verification of the nomenclature, the balancing of authors and texts quoted, etc.) (C. Dubois 1960–61; Klappenbach 1960). According to more ambitious plans, the whole of the arrangement, the treatment of linguistic data preceding the actual printing of the dictionary, will be given over to electronic apparatuses which have been perfected by recent improvements, thus allowing the specialists to establish real contacts with the machines. Already an 'AUTOMATIC DICTIONARY' has been suggested: this new dictionary would contain certain information which could only be consulted on visual terminals or through machine print-outs.[152] Like the applications to automatic translation, these are not just technological feats which are of particular interest to the lexicographer, but

[151] Cf. G. Wahrig 1967 who tries to apply similar principles to new German lexicography. He gives some examples and criticizes the entry 'Wurzel' of Grimm's dictionary for which he suggests a model entry.

[152] For information on the possibilities and limits of the procedures, see G. Wahrig (1967: 59–65). G. Hübner (1961) has presented the results of his experiments on the mechanization of the preparation of *Goethes Wörterbuch*.

rather they provide the basic preliminary research data necessary for the lexicographer's work. Their impact will not fail to bring a new vitality and open up new vistas for contemporary lexical studies.

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Note

The following bibliography will give an initial idea of the richness of European lexicological works. Besides the traditional studies which we will mention in passing, the important methodological works after 1950, in most of the European countries, should be noted and in particular those in France. We will add to these works:

The creation of research centres with considerable technical means (Berlin, Besançon, Cambridge, Gallarate, Göteborg, Liège, Utrecht, etc.). This does not take into consideration the great national services which are preparing thesauruses (Florence, Göttingen, Madrid, Nancy, etc.) and the university teams working in various institutes (such as: Heidelberg, Louvain, Brussels, Saint-Cloud, Bologna, Pisa, Lisbon, Cluj, Saarbrücken, etc.).

Fringe publications, which make up the regular contributions to numerous linguistic and philological reviews, of a new French review, the *Cahiers de Lexicologie* (since 1959), and in Germany, the special volumes devoted to different aspects of this discipline (*Etymologica* dedicated to W. von Wartburg, *Verba et Vocabula* to E. Gamillscheg, *Semantica* to W. Elwert).

The titles of lexicological and lexicographical themes on the agenda of international linguistic conferences (especially as from the 7th Congress of 1952, when this conference appeared to be only of interest to European linguists) and in particular the organization of specialized conferences have had an influence on the present day trends in lexicological and lexicographical research (Strassburg 1957), on the new methods of lexicological research (Besançon 1961), on the word (Paris 1962), on research and descriptive methods of vocabulary (Strassburg 1963), on problems of technical terminology (Luxemburg 1966), on the study of political vocabulary (Saint-Cloud 1968), etc.

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BILINGUALISM

ELS OKSAAR

1. INTRODUCTION

Due to the political and ethnical stratification in Western Europe, almost every country has to deal with various aspects of the multidimensional problems of bilingualism. Not only are there many nations that are regarded as bilingual, there are also bi- and multilingual countries such as Belgium, Ireland, Switzerland and Finland; the official status of the languages, however, varies considerably. Well known examples of the first category are the Welsh and Scots in the United Kingdom, the Walloons and Flemings in Belgium, the Frisians in Holland, the Bretons, Basques, and Provençals in France as well as the Lapps in Norway, Sweden and Finland — to mention only a few. Less known are the conditions and problems of the Finns of Tornedalen in Sweden and in Norway, of the Piedmontese and the Valois in Italy, of the Albanians and Macedonians in Greece — and yet these groups have been living in their bilingual conditions for generations.

1.1

As a consequence of political changes and economic conditions in Europe after World War II, followed by the great national migratory movement, the linguistic situation in several countries grew more complex. Countries that for generations have been looked upon by their native populations as chiefly unilingual — such as Sweden — must recognize that the circumstances have changed. More than 400,000 foreigners (100,000 of them already being Swedish citizens) in a country with 7 million inhabitants have transformed Sweden into a multilingual country, the largest ethnic groups of the new population (after 1945) being Finns, Danes, Norwegians, Estonians, Letts, Germans — in spite of the fact that the majority of the population is unilingual or bilingual in another context, having at present English as a first foreign language at school. Needless to say, the knowledge of the language of the native populations is a condition of existence for most members of all minority groups. Their socio-cultural problems, however, cannot be separated from those of the native population who meet them everywhere in communication situations at schools, at work, in administration. There exists not only contact between languages, but also between cultures.

That there is a variety of functional and situational specialization as to the linguistic behavior in a social network of individuals and of groups, but also as regards language, is obvious. The present situation not only in Sweden but in almost every European country can be characterized by the statement 'when a group is in the process of cultural contact, the function of uses formerly served by one language sometimes come to be divided between two or more' (Cooper 1967:119). Bilingualism is and has been throughout history a central problem in Europe.[1]

1.2

The student of literature in this field, however, may rightly be surprised to find that before World War II very little interest had been shown in methodological requirements of research in order to face all aspects of the bilingualism problem. As regards Western Europe up to now a relatively narrow area has been investigated by the linguists. This fact may have its reasons in the false identification of bilingualism with equilingualism — with a legitimate linguistic disinterest as a result, but also in the linguistic traditions in Europe. The historicism of the neogrammarians has left its traces in the twentieth century too, dominating the fields of research in many countries. 'Bilingualism is one of the most important problems of linguistics, yet it is also one of the most neglected.' This assertion of Mackey (1956:4) is to the fore also today. Though transformational generative grammar has expanded the scope of linguistic analysis, they too, like the structuralists, look at languages as homogeneous wholes, assigning intrasocietal variations to the level of performance.[2]

1.3

Bilingualism as a research area is an interdisciplinary field. It covers linguistic, sociological, psychological and pedagogical aspects as well as political, juridical, geographical and cultural ones. The term bilingualism itself is highly homonymous. It does not only indicate (a) the speech habits or the characteristics of a person, or (b) a group (social class), but can also be (c) the characteristics of a territory or country (Weijnen 1949:6) where two languages are used side by side as in Belgium; and that even when the majority of the inhabitants is monolingual, as is the situation in Finland, where Finnish and Swedish are both regarded as national and official languages.

Due to the complexity of problems associated with bilingualism, it is hardly suffi-

[1] For the linguistic situation of different European states in relation to regional, social and historical facts see Dauzat 1953. Cf. also L. Dominian, *The frontiers of language and nationality in Europe* (1917). See also 3.2.4.

[2] Cf. the instructive discussion of J.J. Gumperz, "Language and communication" in *The Annals of the American Academy of Political and Social Sciences*, vol. 373 (1967).

cient to isolate it as concerning only 'the property of the individual' (Mackey 1962:51). It must be treated also as a group phenomenon, i.a. because of the fact that languages act not only as intergroup means of communication, but also as factors for establishing groups and a means of group identification.[3] Further, it is necessary not only to distinguish between various types of individual bilingualism but also between bilingual situations, in which the languages function.

1.4

Linguistic activity in the field of bilingualism has in Western Europe been focused chiefly on (a) and (b), though attempts to face the problems connected with (c) can be noticed, especially in Holland, Belgium, Ireland and Finland.

The methodical approach and the choice of research subjects must be viewed in close connection with the historical traditions in linguistics which up to the 1960s dominated linguistic work in Western Europe. Interdisciplinary synchronic studies, analyzing the variations in the social and psychological dimensions of bilingualism, e.g. verifying the particular functions of language use and analyzing their settings, have for a long time not been so attractive for linguists in general — Western Europe included — as the subject deserves. It was first in connection with the development of structural ideas, synchronic methods and descriptive techniques in Western Europe (as well as elsewhere) that the scope of bilingual research was extended. The main principles that have influenced modern research in bilingualism, date from the 1950s and originated in North America, where a broader concept of scientific activity in this field emerged after World War II. The turning point was marked by the works of Weinreich (1953, 1958) and Haugen (1950a, 1953, 1956). Several fundamental papers, such as Vogt (1954), Mackey (1956), and Hall (1952), have set the directions of broadening the concept of bilingualism and revealing its methodical requirements — showing through Vogt the Western European share in the modern treatment of the problems. Among other things, the problem of language contact and interference phenomena have been focused on as important for bilingual research. Multilingualism has not infrequently been treated according to the same principles as bilingualism.

1.5

The period of bilingualism research in Western Europe under consideration can be divided into two parts: before and after 1950, clearly following the evolution in methodology mentioned above. This boundary must, of course, not be seen as an

[3] Cf. E. Oksaar, "Språket och samhället" (1966a). Examples of pre-World War I European situations in Kloss (1966:36); cf. also A. Meillet and A. Sauvageot, "Le bilinguisme des hommes cultivés" (1934).

absolute one. Papers such as Tesnière's "Phonologie et mélange de langues" (1939) and several contributions in the *Actes* of the IVth and Vth International Congresses of Linguists (1938, 1939) give evidence of the coming role of linguists in bilingualism research.

1.5.1

In most countries, above all in Germany, France, and in those of Scandinavia, research in the field of languages-in-contact has in the beginning concentrated on the study of foreign words and loanwords, and the question of borrowings and of substrata. A promising beginning in research into these phenomena on a broader basis was made by Schuchardt at the end of the last century. His statement: 'Mit mehr Recht als Max Müller gesagt hat: "es gibt keine Mischsprache", werden wir sagen können: "es gibt keine ungemischte Sprache"' (Schuchardt 1884:5) — contrary to the dominant view — bears witness to new insights.

1.5.2

There followed a certain silence, however, on the part of linguists as concerns new viewpoints. Although questions of substrata and of problems of lexical borrowing have been discussed since the end of the last century (only to mention scholars from various schools such as Ascoli, Hirt, Schuchardt, Lewy, Meillet, Pokorny, Pisani, Brøndal, v. Wartburg,[4] Hubschmid) and these matters played a considerable role at the Vth Congress of Linguists in 1939, there were above all psychologists who investigated various dimensions of bi- and multilingualism. This was chiefly done from the psychological perspective, with the interest focused on reactions and skills of the bilingual individual. Epstein (1915) presents the first extensive monograph on multilingualism from this perspective, analyzing the mutual interdependence of the languages of a multilingual.

The present state of linguistic research into bilingualism in Western Europe can be effectively characterized by Vildomec's (1963:74) still valid consideration: 'There is a considerable lack of linguistic studies of bilingual and multilingual phenomena in individual modern subjects, but there is no lack of generalizations on the influence of foreign substrata hundreds or thousands of years ago.'

1.6

Whether the political situation during the last War and in post-war Europe has checked the interest in bilingualism as v. Weiss (1959:12) maintains, or whether the dominance of comparative-historical methods in linguistics, leaving the subject of bilingualism chiefly to the psychologists and pedagogues,[5] we must consider an open

[4] Whose concept *superstrat* was a necessary complement to *substrat*, see W. von Wartburg (1950: 155). See further p. 488.

[5] A comparison of the themes of the international conference 'Le bilinguisme et l'éducation' in

question. There is very likely more than one reason. The fact is that although we find a lot of contradictory statements as to the methodological situation of bilingualism, the two opposite poles can be characterized by the following standpoints. Weiss (1959:12) demands that in Europe also the attempt must be made to treat bilingualism as a linguistic problem.[6] Österberg (1961:11) claims that the bilingual question should not be viewed simply as a linguistic problem.

Handbooks and works on general linguistics all over the world as well as bibliographies reveal, with some exceptions, interest in bilingualism first in the '60s. It is significant that the *MLA annual bibliography* and the *Linguistic bibliography* have the heading 'bilingualism' for the first time in 1962. American linguistic textbooks, such as H.A. Gleason's *An introduction to descriptive linguistics* (1955) did not deal with bilingualism. Ch.F. Hockett, *A course in modern linguistics* (1958), mentions it. Gleason's *Linguistics and English grammar* (1965), however, devotes a chapter to bilingualism. Martinet, *A functional view of language* (1962) and Lyons, *Introduction to theoretical linguistics* (1968), discuss bilingualism shortly. One notices that Steible's *Concise handbook of linguistics* (1967) does not refer to bilingualism, whereas Pei and Gaynor, *A dictionary of linguistics*, define the terms 'bilingual' and 'bilingualism' as early as 1954. J. Marouzeau, *Lexique de la terminologie linguistique* (1933), has 'bilinguisme' as early as 1933, giving it, in the 3rd edition of 1951, the same definition without alteration.

1.7

I am going to analyze the publications in Western Europe on the basis of the following sources: 66 journals and 7 bibliographies have been scanned systematically for the period 1918–68. They have been checked against the bibliographies in Weinreich's, Haugen's, Vildomec's and Deroy's monographs.

In order to get as large a sample as possible, the main principle of the selection has been whether: (a) the author belongs to Western Europe, (b) the study has been published in Western Europe. Certain exceptions to this scheme have been necessary. Works that have influenced present research in bilingualism are sometimes included in general discussions, quite regardless of their origin.

The total number of titles for the period is 1430. Section 3 gives a rough selection of them according to various viewpoints and comments upon some of the representative works as well as general tendencies of each group. Section 2 deals with the scope of bilingualism, with emphasis on Western European research in a general frame of reference.

Luxemburg 1928, dealing with educational aspects in Luxemburg, Belgium, Wales, Moravia, Catalonia, with those of the international seminar 'Bilingualism and Education' in Wales 1960 (= Unesco 1965), dealing among other things with linguistic, social, psychological and cultural aspects of bilingualism, reveals an interesting widening of types of problems among psychologists also.

[6] 'Doch müßte jetzt auch in Europa der Versuch unternommen werden, die Zweisprachigkeit als ein sprachwissenschaftliches Problem zu behandeln ...'

2. THE SCOPE OF BILINGUALISM

2.1 *Definitions of bilingualism*

Various attempts to define bilingualism make the following observation possible: abstractness or vagueness of definitions often correlates positively with the modernity of the linguistic publication.

There is no general agreement as to the degree of proficiency in two languages or the relations between them which are necessary in order to speak about an individual as bilingual. Nor up to now, as the Moncton International Seminar of 1967 showed, have reliable techniques been employed to measure bilingualism. To judge from the various definitions in modern publications, the term 'bilingualism' can cover all stages from the Bloomfieldian 'native-like control of two languages' (1933:56) to a minimal knowledge in the second language. The first would mean, as Vogt (1954:249) states — rightly questioning the possibility — that either language could be used in any situation, with the same facility, correctness and proficiency as by a native speaker. This state, by some also regarded as theoretically impossible, is as difficult to measure as all other degrees of bilingualism, because it presupposes the measuring and comparison of linguistic and situational norms together. The nonlinguistic factors may vary differently in respect to the two languages. However, their theoretical concept of equilingualism is of little interest for the linguist. It is the interference phenomena, arising through the contact of languages: in brief, the effects on language usage that open wide areas for linguistic research.

2.1.1

The concept of bilingualism cannot be separated from the problem of contact of languages and its consequences for the languages on the one hand and for the persons and groups involved on the other. A further important aspect is biculturalism, as bilingualism and biculturalism can (but need not) coincide (cf. Sofietti 1955).

2.2

In his still unsurpassed detailed survey of most problems connected with language contacts, Weinreich (1953:1) defines bilingualism as 'the practice of alternately using two languages' and regards the person involved as bilingual. For Haugen (1953:6) an individual is bilingual when he is able 'to produce complete and meaningful utterances in the other language'. These definitions, ignoring the concept of equal knowledge of two languages, make it possible to speak about various degrees of bilingualism. Earlier views can be contrasted with them. According to Braun (1937:115ff.), multilingualism and bilingualism presuppose 'aktive vollendete Gleichbeherrschung' of the languages, quite regardless of their acquisition. Also Christophersen (1948:4), though

thoroughly aware of the difficulties in assessing perfection, seems to start from equal linguistic performance as basis and finds as the only possible definition for the bilingual 'a person who knows two languages with approximately the same degree of perfection as unilingual speakers of those languages'.

These generalizing definitions, however, cannot include several fundamental aspects, especially psychological and social ones. As Unesco (1965:108) puts it: 'Bilingualism is what the individual or the community makes of the necessity or desirability of learning a second language ... It is not the simple fact of two languages in contact that is interesting or important but the consequences of that fact.'

2.2.1

There have been various attempts to focus on the concept from different viewpoints. For Weiss (1959:20), bilingualism is a task set by the environment, that has to be fulfilled. He stresses the complexity of the concept and regards it as: 'der unmittelbare aktive und passive Gebrauch zweier Sprachen durch einen Sprachträger.' The important aspects of encoding and decoding are here, however, only touched upon.

A social-functional approach lies behind the statement of Florander (1960) who expects bilingualism only when two languages are used as a necessary daily medium of contact.

These definitions already show clearly that there is no agreement as to the indicators that characterize an individual as bilingual. What bilingualism is, has in fact not only theoretical relevance. The term 'bilingual' appears in numerous tests and enquiries, in connection with the effect of bilingual education upon children and the rather dubious question of usefulness or injuriousness of bilingualism. In tests with bilingual children the kind of bilingualism and of samples have often not been stated,[7] and, as Williams (1967:16) emphasizes, the factor of bilingualism has not been isolated from other factors in the total situation. The results, however, have been given general validity and they are frequently cited in pedagogical and psychological literature.

2.3

Interest in systematizing and classifying bilingualism according to various factors can be noticed in Western European publications throughout the period under consideration, the authors being linguists and psychologists. The basis of typologization is found in the distinction between bilingualism as a social phenomenon and as a factor in the linguistic behavior of an individual.

2.3.1

There have been several attempts to determine the context in which a child acquires

[7] There have been immigrant children thrust into the second-language situation. See also J.H.S. Bossard, "The bilingual as a person — linguistic identification with status", in *American Sociological Review* 10 (1945), pp. 699–709 (Washington, D.C.).

the second language. Adults have until recently not been discussed, although this is an important problem because of the increasing mobility of the people in the post-war world. At the International Conference on Bilingualism and Education in Luxemburg 1928 three types of bilingualism were distinguished: 1) HOME BILINGUALISM, 2) STREET BILINGUALISM, 3) SCHOOL BILINGUALISM. The three types of Geissler (1938:22ff.): 1) FRÜHKINDLICHE ZWEISPRACHIGKEIT, 2) SPIELZWEISPRACHIGKEIT and 3) SCHULZWEISPRACHIGKEIT are on the same level. They are representative of pre-war classifications, as well as the distinction between NATURAL and ARTIFICIAL. These opposites are often referred to as 'spontaneous, unorganized' — 'systematically organized', according to the conditions under which they arise.[8] Representative of the first is the situation of English and Welsh in Wales or of Finnish and Swedish in certain areas in Finland, where two languages are a necessity forced upon the individual by the surroundings and are therefore mastered in early childhood without systematic tuition. This factor — systematic study — is typical of ARTIFICIAL bilingualism, that is characterized also by the absence of a permanent linguistic environment.

2.3.2

Among the earliest and most detailed classifications of bilingual usage in terms of the environment is that of Schmidt-Rohr (1932:183). He distinguishes between nine domains of language use: family, playground, school, church, literature, press, army, the courts and administration.

The kind of bilingualism depends on the role that each language plays for the individual in social situations. The earlier studies sometimes also touch upon what is now widely known as REGISTER: 'a linguistic variation correlating with a variation in the immediate situation of the utterance or text' (Ellis 1965:11). Among the various contributions that have been made towards specifying and quantifying the types of bilingual situations that concern an individual or a community, we point out Grootaers (1948:291ff.). He distinguishes between four types of bilingualism: 1) INDIVIDUAL, 2) SOCIAL, 3) GEOGRAPHICAL and 4) STYLISTIC and discusses 1–2 and 4 in more detail. Social bilingualism refers to the situation where the use of two languages or of a language and a dialect is determined by the social spheres of a community or a certain area, as in Flemish-Belgium. The linguistic situation in Norway, too, can be viewed as social bilingualism, because Riksmål, based on Dano-Norwegian, is used by urban officials; Landsmål traces its origin to the western dialects and the folk speech of rural areas (cf. Haugen 1966). Stylistic bilingualism comes to the fore when we have to do with two forms of the same language, each of them having its own sphere of use. Grootaers (:295) refers to modern Greek as an example, applying the term 'diglossie' for this. For relatively stable language situations, such as those in the German-speaking cantons of Switzerland, where Standard German and Swiss German are

[8] A detailed analysis by Serdyuchenko (1965:21ff.). For the discussion of the terms 'balanced' and 'dominant' and the concepts 'coordinate' and 'compound', used particularly in American literature, see Macnamara (1967a).

used by the whole adult population, yet for distinct functions,[9] Ferguson (1959:336ff.), referring also to modern Greek, applies the term 'diglossia'. Western European authors have successfully used this concept, e.g. Kloss (1967a:46) in describing the process of dialectization in linguistic assimilation policy. From recent literature it appears (e.g. Macnamara (1967b:3)) that the term diglossia has been generalized and is applied to situations in which a high or standard variety will be used as a means for more formal communication.

2.3.3

Schuchardt (1884:133) already called attention to the socio-psychological differences in bilingualism by the distinction between LOCAL and CULTURAL bilingualism that is significant for Europe. It is surprising that so little sociolinguistic research has been done in this sphere in various countries. LOCAL refers to an early stage of bilingualism that arises in the family, in the playground, or during the first years at school and is learnt in natural circumstances. The CULTURAL (artificial) variety can be found among the educated classes in many countries, it can include stages of reading knowledge in one language only (cf. 2.3.1 and Vildomec 1963:41).

In the *Report of the 'Bilingualism in Education' Seminar* 1960, presented by Lewis (Unesco 1965:125ff.), an excellent detailed classification of types of bilingual situations can be found. The typology is based on 'the character or linguistic status of the languages' and on 'the nature of the groups which speak them in the administrative and political system'. Both systems can be documented from the current situation in many countries in present-day Europe, giving rise to various subsystems (cf. 1.). In the sixties we notice an increased activity in stressing the social-motivational factors in determining bilingualism. The present situation in Europe, however, seems to offer possibilities of refining this typology. Due to the fact that in many Western European countries there are *Gastarbeiter*, especially from Southern Europe (over 1 million in Western Germany), a considerable number also in Sweden, there are situations that favor receptive bilingualism — which presupposes understanding, excluding or minimizing speaking of one of the languages. Also the situation in Scandinavia, that Haugen calls semicommunication: 'the trickle of messages through a rather high level of "code noise" — communication across language gaps' — has to be examined more closely.[10]

2.3.4

Again in the 'Bilingualism in Education' Seminar *Report* (Unesco 1965) we find a

[9] Standard German for most written and formal purposes, Swiss German for ordinary ones.

[10] Haugen (1966:281). — A detailed model of situational bilingualism is given by Kloss (1967a) in terms of: 1) diglossic bilingualism (language-dialect); passive bilingualism (dialect becomes language); replacive bilingualism (dialect survives language); residual bilingualism (vestiges of extinct tongues), also called incipient bilingualism. 2) Bilingualism outside the sphere of face-to-face encounter: consumptive bilingualism (bilingualism in the use of mass media); productive bilingualism (literature written in several languages); impersonal bilingualism (bilingualism in governmental agencies).

notable contribution to the classification of bilingualism from the point of the individual. Malherbe (16f.) divides the infinite number of possibilities of the efficiency of both languages along the scale from zero to the unapproachable ideal of 100% into six stages, 'which correspond roughly to certain social and occupational demands of a practical nature', stating exactly the requirements for every stage. The lowest possible stage requires following intelligently an ordinary conversation, speech, or sermon, in the second language, both in its written and in its spoken form.

More general is the definition given by Macnamara (1967a:59). He regards as bilingual a person who possesses at least one of the language skills given in the following matrix, even to a minimal degree, in his second language.

TABLE 1

Encoding		Decoding	
Speaking	Writing	Listening	Reading
Semantics	Semantics	Semantics	Semantics
Syntax	Syntax	Syntax	Syntax
Lexicon	Lexicon	Lexicon	Lexicon
Phonemes	Graphemes	Phonemes	Graphemes

A rather detailed survey of classifications of bilingualism is given by Pohl (1965), in which he distinguishes, among other things, between 'bilinguisme horizontal, vertical, diagonal et troisquarts' and 'bilinguisme symétrique ou asymétrique', revealing, however, involuntarily the uselessness of giving new labels to already named concepts.

2.3.5

Switching from one form of the same language to another by moving from one social sphere into another is not included by Unesco (1965:125) among the phenomena of bilingualism. A bilingual situation, however, can be constituted by dialect and standard, when 'considerable difficulties arise in understanding what is being said in the dialect form' (:126). On the other hand, recent American sociolinguistic literature calls attention to the fact that the bilingual's shifting from one language to another can be caused by the same social pressures which would lead a monolingual to change from colloquial to another style, e.g. technical, formal (Gumperz *op. cit.*, fn. 2:48; Fishman 1965). And in *Problems of bilingualism* (1967) several contributions prefer a single theoretical model for all kind of code-varieties, monolingual as well as bilingual (cf. Macnamara 1967b:3 and Hymes 1967:9).

Although these problems are of high interest, we have to ask whether it is practical to make the term bilingualism still more polysemantic than it already is, before we have thorough knowledge of monolingual and bilingual behavior.

2.4

Summing up: there is a strong tendency, especially from the '50s up to now, to widen the scope of bilingualism. The post-war works stress the need for categorizing types of individual bilingualism as well as the bilingual situations, giving a variety of categories for both. The discussions regarding the definitions of 'bilingualism' and 'bilingual' have not lost their topical interest. The contradictions between findings seem partly to depend on a certain underestimation of the complexity of social situations and the question of language functioning. It is therefore not surprising that certain older classifications, which are no longer topical, appear again and again; e.g. in the textbook of Hörmann as the only explanation for the phenomenon: 'Echter Bilingualismus entsteht meist bei Kindern, die in einem zweisprachigen Elternhaus aufwachsen ... oder durch fremdländische Kindermädchen oder Dienstboten von frühester Kindheit an eine zweite Sprache lernen' (Hörmann 1967:210).

3. PARTICULAR TRENDS IN WESTERN EUROPEAN RESEARCH

3.1

The total sample of 1430 items can be broken down according to the following main topics.

0. General works and surveys	10
I. Language contact	
1. Contrastive descriptions, language 'mixtures'	
1.1 General and theoretical problems; substrata	268
1.2 Languages or dialects	82
1.3 Languages and dialects; diglossia	98
2. Linguistic interference and borrowing	
2.1 General and theoretical problems	104
2.2 Lexical and semantic units	374
2.3 Phonology and grammar	48
2.4 Combinations of 2.2–2.3	82
3. Pidgins and Creoles	22
II. The bilingual individual	
1. General and theoretical problems	22
2. Case studies	41
3. Language acquisition and proficiency	40
4. The effect of bilingualism on intelligence and mental achievement	64
5. Language disorders	10
III. The bilingual group/society	
1. General and theoretical problems	61

2. Minority problems	58
3. Educational policy	36
4. Institutional studies	10

3.2 *Commentary on the outline*

3.2.1 *General works*

There are only a few works to which this heading could partly be applied if we measure generality in this field by Weinreich's (1953) and Haugen's (1956) publications. Yet they are of different type from these comprehensive research guides. Vildomec (1963) deals with bilingualism from psychological and linguistic perspectives. His chief merit is a critical review of more than 200 books and articles in these fields and, though the methodical stringency leaves something to be desired especially in parts of the linguistic description, the work serves as a good complement to earlier surveys. Its empirical parts, analysis of a number of sample texts and questionnaires of European multilinguals, offer interesting observations on mutual interference between languages among bilingual and trilingual individuals (i.e. Czech-German-French) that verify the earlier observations. Interference is seen as a reduction to one single rule: the tendency to save effort. An important problem that remains to be solved is: 'whether the total amount of interference between two similar languages is really greater than between two dissimilar ones, and what are the differences between the mechanism of interference of related and unrelated languages' (:171). As a professional teacher Vildomec shows great interest in the applied sector of bilingual research.

The same trend can be noticed with v. Weiss (1959), whose investigation aims at a typology of the bilingual individual and of bilingualism. Common to Weiss and Vildomec are also their empirical attitudes, psychological implications as well as the discussion of current literature. A major point in Weiss' theory is his concept of bilingualism as a task that the individual has to master. He analyzes the bilingualism of German secondary-school pupils in Estonia. The material — questionnaires and 400 written compositions in both languages (as early as 1938) — is the first comprehensive confrontation of a modern Germanic and Finno-Ugric language. The analysis of mistakes on the lexical and grammatical levels provides a model for three different groups of bilinguals; the general discussion of the results offers not only psychological and pedagogical views, but also sociolinguistic aspects.

There are a number of studies where we find discussions on a more general level, too, as Nuijtens (1962) and Elwert (1960). They will, however, be referred to in their respective sections, as well as Wieczerkowski (1963) and Österberg (1961), because their main parts are more specific than the above mentioned ones. A popular presentation of the problems of bilingualism — also from linguistic and psychological viewpoints is given by Hansegård (1968). There are a number of shorter surveys of

bilingualism such as Christopherson (1948), van Loey (1951), Williams (1967), the latter especially of Welsh and Irish problems, Oksaar (1961, 1963), Ringbom (1962). Also Unesco (1965) deals with general aspects of bilingualism, though the main stress lies on education.

3.2.2

A breakdown of the figures in section I shows that by far the most actively studied field has been that of linguistic interference and borrowing (I 2), followed by the more descriptive group of contrastive descriptions and language mixtures (I 1).

3.2.2.1 There are several perspectives from which contrastive and confrontative analysis of language can be viewed. In modern language description the aim of contrastive studies is to be able, by comparing equivalent subsystems of two languages, to establish the similarities and dissimilarities of these languages. The main object of these studies of which not a few have appeared during these last years, has been to prepare rational materials for teaching (see Hammer and Rice 1965 and Krzeszowski 1967). Yet they are of great importance also for the observation of interference phenomena, as false interlingual identification may arise in cases of partial similarity. Examples can be given even in the sphere of the so-called international foreign words: Engl. *culture* is not entirely in the same semantic sphere as Germ. *Kultur*; the same is the case with Engl. *genial* — Germ. *genial*, Engl. *civilization* — Germ. *Zivilisation* (cf. Oksaar 1963:11). Without a thorough knowledge of both structures it is not possible to make clear on which levels and in which way languages can influence each other.

Works in section I.1 deal primarily either with methodological and terminological problems of the results of language contact, chiefly concerning 'language mixture and substrata' in general, or they are surveys of the contact between two (or more) languages or dialects, or between languages and dialects. For the post-war works it seems to be more characteristic to view the languages as a system in their social setting, whereas the earlier ones separated language to a great extent from social reality.

The figures call for some comment. The high number of I 1.1 is due to the fact that investigations of substrata, superstrata and adstrata, which have played an important role in Western European research, have been classified here. A representative example of the present approach in substratum studies is provided by Veenker's (1967) analysis of the Finno-Ugric substrat in Russian, with regard to previous important literature. Cf. also Brøndal (1917), Lewy (1961), Boileau (1946).

3.2.2.1.1 The question of the consequences of language contact has in earlier Western European tradition resulted in a certain methodological and terminological disagreement as to *language mixture* (Sprachmischung), *mixed languages* (Mischsprachen), *substratum*, *language change*, *hybrid language* etc. This discussion continues. Characteristic of the works from various European countries is their dealing with historical material and for the most the lack of structural criteria and measurement techniques

for their categories. Schönfelder (1956) gives a rather detailed survey of various problems arising from the rather one-sided study of *Sprachwechsel* in the past.

American linguists such as Haugen (1953:362) refrain from using the term *mixture, mixing*, because of its misleading connotations. Mixing of languages implies that a new language arises out of previously existing ones. As Haugen sees it, elements belonging to one linguistic system are transferred into another. European linguists still keep using the term, though not uniformly. Schönfelder (1956:9) speaks of *Sprachmischung* 'wenn bei einer einseitigen oder gegenseitigen Beeinflussung zweier Sprachen neben dem Wortschatz auch das Lautsystem, das morphologische System und die Syntax der einen oder der anderen Sprache betroffen werden'. For influences on the vocabulary only he prefers the term *Entlehnung* (loan). The term *Mischsprache* (mixed language) refers to a higher degree of foreign influence than *Sprachmischung*, cf. Rosetti (1945–49). We find categorizations among others by Deeters (1927:57) and Kloss (1952:211), but there are not a few who reject this term entirely. Surveys, general: Bouda (1947), Nöckler (1963); the problem of hybrid languages is discussed by Roberts (1939).

As there are not a few studies in this area, it would be an interesting task to make a comparison of the positions of various terms in the Western European model with the structure of the terminological field presented to us through American studies: such as Haugen (1950a, 1953), Weinreich (1953). Western European linguists, with a few exceptions (see 1.2), did not take part in the general discussions, as concerns code-switching and interference or integration, before the 60's. Even today, however, Haugen's (1950a:272) statement is valid: '... we can hardly say that the basic laws of interlingual influence are fully clarified'. Lack of empirical studies from various modern areas seems to be the main reason.

3.2.2.1.2 The second group of works deals with the situation of one or two means of communication in a bilingual area, describing the present state and giving their historical backgrounds. Works of primarily survey character are grouped here. A considerable number of papers are devoted to Pennsylvania German: 'eine Sprache mit überwiegend pfälzischer Lautung, mit einem pfälzisch-schwäbisch-englischen Wortschatz und fränkisch-baierischer Satzmelodie' (Wood 1952:801).[11] Among the studies from various Western European countries we find surveys such as Ahlbäck (1955) and Törnudd (1967) among the rather numerous contributions on the present situation of Swedish in Finland, and Karsten (1929) on Baltic contacts. More comprehensive is Berquet (ed.) (1963) on the language situation in Switzerland and Belgium. Belgium is also the basis of Olijf's discussion (1940–47); Boesch (1962) gives an all-round view of the state in Switzerland; the language situation of Luxemburg is dealt with by Hess (1946), to name only a few. Detailed data from Flanders are given by Pée (1957). While a considerable number of authors deal with the contact of standard and dialect,

[11] A comprehensive bibliography (nearly 300 titles) for the German dialects in the USA and Canada and their contact with English is presented in Viereck 1967.

or, as Fausel (1962) with standard, dialect and language mixture, diglossia is only touched upon by Western European writers.

The problem of diglossic bilingualism in Europe has been discussed among others by Kloss (1967a:46) with reference to Low German, Occitan, Basque and Sardinian. Switzerland is by far the most popular exemplification of diglossia; the Greek situation with 'Katharevousa' and 'Dhimotiki' is less often referred to. As the first is used in a more formal function: in church, politics, law, government, it is remarkable that the second appears in literature and literary criticism (for further discussion see Householder, "Greek diglossia", 1962).

A number of publications deal with contact problems and language planning, e.g. Sommerfelt (1957), who describes the linguistic situation of Norway, where Landsmål and Riksmål exist side by side. Structural and social problems arise through the fusion of these two in Samnorsk or United Norwegian (this problem has recently been analyzed by Haugen 1966). Henrichsen (1958) reports on the situation in France; Thomas (1964) discusses the increase in the use of Catalan and the attempts at standardization.[12]

3.2.2.2 *Linguistic interference and borrowing.* When a monolingual can be said to possess one set of norms[13] and thus have effective command of one linguistic system which is codified and accepted by the community, Aa, a bilingual has at least two sets, Aa and Bb. The contact that arises between these sets through their existence in the same individual can result in INTERFERENCE, for which Weinreich's (1953:1) definition is the most common one: 'Those instances of deviation from the norms of either language which occur in the speech of bilinguals as a result of their familiarity with more than one language.'[14] The complexity of the interference can schematically be shown as: AB, AaB, aB, aBb, Ab, Aab, ab ....

There are two important methodological points of view that we have to take into consideration when analyzing the work done. Language contact must be regarded as 'a complex of closely intertwined linguistic and non-linguistic phenomena' (Haugen 1956:39). Contact leads to interference, but WITH WHOM, WHERE and WHY? These questions are seldom answered satisfactorily. We find hundreds of studies that have analyzed foreign influences at the lexical level, further a great number in which attention is directed toward the problem of morphological and syntactical modifications and changes in systems. The existence of individuals as media and provoking factors

[12] For the situation in Scandinavia, cf. the publications "Nordiska Språkfrågor", ed. by Nämnden för Svensk Språkvård in Stockholm.

[13] Cf. Haugen (1956:9). It must be taken into consideration that a bilingual cannot only model his speech on the monolingual's norm in either language, but also on a local bilingual code.

[14] The terminology of Weinreich differs from Haugen's. Whereas Weinreich (1953:11) distinguishes between interference in speech and interference in language, Haugen (1956:40) has a threefold classification: CODE-SWITCHING, referring to the use of items from the other language without adaptation; INTERFERENCE, referring to the overlapping of two languages; INTEGRATION, referring to the complete adaption of items from the other language. Another important non-European contribution to this question is W.F. Mackey (1965).

for these processes, however, has hardly been taken into account in the older literature. There is a considerable lack of interest in idiolects of the individuals even today and the fact that a bilingual group is the condition necessary for any large scale borrowing — as already pointed out by Paul (1909:391ff.) — appears only in the background. The often drawn picture that the loans, borrowings and all kinds of mutual influences seem to occur in a social vacuum certainly holds true. Conviction and definiteness in making statements seems to increase in proportion to the elimination of important factors. Yet, the social, economic and cultural environment in which the contact of languages and integration of linguistic innovations takes place is of vital importance for our understanding of the whole process, and its role must not only be stressed, but also taken into actual consideration in future studies.

3.2.2.2.1 In Western Europe the research has been focused on certain interference phenomena, especially lexical ones (see Table 1, 2.2) long before the complexity of the problem and the necessity of finding methods for the identification of interference at all levels of a language made this research one of the most central questions in the study of bilingualism. Among the publications of a general and methodological character, Vogt (1954), Haugen (1950b, 1956, 1958) and Hasselmo (1967) should be mentioned.[15] In his paper "Language contacts" Vogt directs attention to various methodological and practical problems in connection with language contact and interference. The principal, often discussed question is whether it is possible to affect the language system so that it leads to the emergence of new grammatical categories. Individual cases of code switching — 'the conscious successive alternate use of two different language codes within the same discourse' (Haugen) — are frequent, but have they a lasting structural effect? Structural innovations may depend on the influence of foreign linguistic systems, but, as Vogt, referring to Jakobson, stresses: 'linguistic interferences affect the system only in so far as the foreign elements correspond to some of these innovation possibilities offered by the receiving system' (:252). This statement, however, needs further clarification as to the sensitiveness of systems and their innovation possibilities. There is still uncertainty about what these innovation possibilities of a system are. On the other hand, experiences of language reforms, such as those connected with Hungarian, Norwegian and Estonian, show that languages can be changed deliberately. The innovations of the Estonian language reformer Aavik are proof that arbitrarily coined new derivational and inflectional morphemes and new grammemes — such as the synthetic superlative — can be wholly accepted by the language users and have been incorporated into the language (cf. Tauli 1968). This evidence seems to contradict the statement mentioned above. It can be argued that these artificial, arbitrary innovations always correspond to the possiblities of the receiving language and have therefore been accepted. However, unless this is empirically disproved, the contrary is also possible. Attention has to be paid to the fact, too, that not only the structural possiblities of the receiving

[15] Cf. also Deroy (1956) and the literature discussed by him and Vildomec (1963).

language but also a complex of social and psychological factors contribute to the interferences in language.

The question as to whether the grammar of a language can be changed through interference has been discussed throughout this century, without any agreement.[16] There are no clear cases that would permit the generalization of statements that grammatical paradigms, bound morphemes, word order etc. can be subject to interference. There are mostly single cases referred to, as by Magenau (1964), Reiter (1960); most studies, analyzing present contacts, are rightly very careful in their judgements, e.g. Carstensen (1965:69) who indicates the possibility that the change of word order in present-day German can be dependent on English influence as well as on the intrinsic structural forces of German.

At any rate, the present state of research hardly permits generalizations such as: 'Grammatical interference is just as universal — syntactic patterns of one language intrude into the other' (Gleason 1965:373).

Without the sociological background of the giving and receiving societies in questions of cultural, political and economic relations and without a thorough knowledge of the structures of both languages there undoubtedly must be a lot of hypothetical results as concerns not only grammar but also lexical interference.

As to the latter, Haugen, though an American linguist, must be mentioned in this section. In "Problems of bilingualism" (1950a) Haugen discusses among other things the possibilities of a typological classification of loans. As a basic distinction he introduces the concepts IMPORTATION and SUBSTITUTION and distinguishes between three main classes of loans: LOANWORDS, LOANBLENDS ('partial substitution of native morphemes beyond those of inflection') and LOANSHIFTS ('all loans in which complete substitution of native morphemes has taken place'). In the paper delivered at the 8th International Congress of Linguists in Oslo, 1958, the emphasis lies on dialinguistic description and on the problems of interference (see also Haugen 1950b). Hasselmo (1967) presents a comprehensive survey of the present state of knowledge with respect to the measurement of the effects which one language may have on the other in the speech of bilinguals. He shows very clearly how little we know about this field in spite of the considerable amount of work done.

3.2.2.2.2 The majority of studies and papers dealing with linguistic interference and borrowing (I 2.2.–4.) are characterized by their rather atomistic view of languages, especially before 1950. However, there have been ambitious studies in most Western European languages to trace the cultural contacts and cultural development of a community by means of the various strata of their loanwords. Representative of this trend, which is important for the history of civilization, is a great number of works such as Seiler, *Die Entwicklung der deutschen Kultur im Spiegel des deutschen Lehnworts*, 8 vols. (1923–24), or Mackenzie, *Les relations de l'Angleterre et de la France d'après le vocabulaire* (1939–46). We find studies of this kind in great numbers

[16] For earlier discussions see Weinreich (1953:29ff.) and Vildomec (1963:101ff.).

dealing with the problems of influences chiefly on the lexical level from diachronic or synchronic points of view throughout history. An extensive bibliography can be found in Deroy (1956). We can mention Llevelly (1930) Low Dutch(sic, Deutsch)-English; Wessén (1954) Low German-Swedish; Lévi (1950–52) German-French; Öhmann (1942–44) and Wis (1955) Italian-German, to point out only a few in a field that — to judge also from the treatment in textbooks — has been touched upon by the majority of European linguists and is connected with names such as Rohlfs, Gamillscheg, Jaberg, von Wartburg, Tappolet, Collinder, Kalima, Suolahti, Meillet, Frings, Mitzka, Senn — to take a random sample.

3.2.2.2.3 The mechanism of linguistic interference and its reasons has interested a number of scholars and has also been discussed at various International Congresses of Linguists since Copenhagen 1938. Grossmann (1926) deals with language contact phenomena concerning Argentinian Spanish and some European languages. The process of linguistic borrowing is thoroughly analyzed by Stene (1945), who presents an important contribution on the English loanwords in modern Norwegian. The loans are spread through a minority group which has learned English as a foreign language. Schönfelder's (1957) detailed analysis of German loans in American English is given in an instructive survey of the social context. This field had been treated earlier by Stone (1934). Foster (1955) deals with recent American influences on standard English, the English interferences in contemporary Spain are analyzed by Alfaro (1948). Hansegård (1967) offers an analysis of some 2500 Finnish loanwords in Jukkasjärvi Lappish. An exhaustive study of the English influences on German after 1945, mainly on the lexical level, is given by Carstensen (1965). As to language-dialect influence, mention may be made of Foerste (1938), de Gregorio (1930) and Kirch (1952).

These works, rich in empirical observations, sparing in theoretical models or systematization of their material (not a few give it in alphabetical order), can be regarded as representative of the majority of studies in this section. They usually deal with one-way influence, that is with influence in one direction.

Interference phenomena, sometimes also from a two-way perspective, are the subject of discussion in a number of studies dealing with language contact in frontier and settlement areas. Here we note works such as Reiter's *Die polnisch-deutschen Sprachbeziehungen in Oberschlesien* (1960), with a heavy emphasis on the sociocultural factors of borrowing and Kuhn (1963), who calls attention to certain interferences in the German-Danish frontier area.

Numerous contributions on Pennsylvania German are grouped here, too, as well as the series of investigations of the German standard language outside Germany, for example the studies of German in Alsace and Lorraine (1962), in Luxemburg and Belgium (1964) by Magenau, or in the USA (1964), Canada and Australia (1965) by Wacker. Their main contribution lies in the careful registration of the deviations from the standard German norm on all levels of the language as a result of interferences. Also here the dominant part consists of lexical items such as loanwords,

TABLE 2

Betz	*Haugen*	*Weinreich*
Lehngut	Linguistic Innovations	Lexical Interference
Lehnprägung	Borrowed	Simple Words
Lehnbildung	Loanshifts	Transfer (5)(6)
Lehnformung	Creations	New Function
Lehnübersetzung (1)	Exact (1)	Homonymy (3)
Lehnübertragung (2)	Approximative (2)	Polysemy (4)
Lehnschöpfung (10)	Extensions	New Expression (8)
Lehnbedeutung (3)(4)	Homonymous (3)	Compound Words and Phrases
Lehnwort (5)(6)	Synonymous (4)	Transfer (7)
	Loanwords	New Function
	Assimilated (5)	Loan Translation proper (1)
	Unassimilated (6)	Loan Rendition (2)
	Native	Loan Creation (10)
	Induced (10)	Hybrid Compounds (9)
	Spontaneous	

Examples:
(1) Germ. *Jungfernrede* < Engl. *maiden-speech*
(2) Germ. *Gegenstand* < Lat. *objectum*; Germ. *unterspielen* — Engl. *understate*
(3) Amer.Yidd. *kern* 'to sweep' receives the content of the English *to care*
(4) Amer.Port. *livraria* 'bookstore' assumes the content of the English *library*
(5) Germ. *Bonbon* [bɔŋ'bɔŋ] < French *bonbon*
(6) Germ. *Bonbon* [bõ'bõ:] < French *bonbon*
(7) Florida Sp. *objectores concientes* < Engl. *conscientious objectors*
(8) Yidd. *vakátsje* 'vacation' > Am.Yidd. *vekejšn*
(9) Amer.Norw. *eplepai* < Engl. *apple pie*
(10) Germ. *Fallbeil* for French *guillotine*

loan creations etc.[17] The German language in Brazil is discussed and exemplified by rich material, not only in the wordlists by Fausel (1959), who also accounts for the sociological and psychological background of Sprachmischung, cf. also (1962).

3.2.2.2.4 Whereas in American linguistics the systematization of various kinds of interference in a more sophisticated way dates from the '50s (cf. the discussions in 3.2.3.1; Gneuss 1955; Ganz 1957; Back 1935; Fokos-Fuchs 1953; Deroy 1956), the Western European activity started earlier, the terminology now dominant having been built up on the basis of German by Betz (1936 and 1949), who refined the previous European attempts to distinguish between formal and semantic loans. Discussion of the terminological models is still going on, because of the insufficiency of the present systems to cover most of the possibilities of the process and of the results of linguistic integration (see Carstensen 1968; Öhmann 1962; cf. also Clyne 1967b). It is important to be conscious of the fact that the system, developed and adapted on the basis of certain languages, can hardly be considered as a universal model.

Table 2[18] gives a schematical comparison of the principal terms in Betz's system with

[17] Their material is derived from written sources such as newspapers etc. Mention may be made also of the rather numerous descriptions and analyses of the different language developments in Eastern and Western Germany. For a bibl. see "Das Aueler Protokoll. Deutsche Sprache im Spannungsfeld zwischen Ost und West" (*Die Sprache im geteilten Deutschland*, ed. by H.Moser, vol. I) (Düsseldorf 1964); the most exhaustive treatment of the subject we find, apart from the West-German authors, by the Swede Hammarberg.

[18] Cf. T. Schiebe, "Zum Thema der Zweisprachigkeit". Examination essay, Stockholm Univ (Stock-

those developed by Haugen and Weinreich. Though the various approaches have their own frame of reference there is a great deal of similarity. LOANWORD refers to borrowed identities, LOAN TRANSLATION to borrowed distributions (cf. Hasselmo 1967: 94 for terminological discussions).

These systematizations without doubt are of great methodological help in explaining linguistic innovations. One of the most popular and earliest research areas has been the analysis of non-native words in order to find criteria for various degrees of linguistic integration. The degree of phonological, morphological and graphemic integration serves as a basis for the distinction between FOREIGN WORDS and LOANWORDS, two terms that we find in most European languages; the German works, however, also give a threefold gradation: *fremde Wörter, Fremdwörter, Lehnwörter.* That there is considerable difficulty in drawing a clear-cut borderline between these categories is obvious. For discussions see Richter (1919), Møller (1933), Hasselmo (1967), Oksaar (1963).

One cannot help noticing that there is a great deal of confusion in the treatment of interference and linguistic change. Is it relevant to speak of loanwords as interference? If they are loanwords they are already part of a new norm, part of the language of a group. However, interference and the idiolect of an individual belong together — at first. We have, when describing the cases, to make a distinction between the more abstract level of phonemes, morphemes etc. and the concrete one of phones, morphs (cf. the commentary of Le Page 1967:6). Yet a central question, not yet satisfactorily answered, is: When does interference become borrowing?

In comparison with the section just discussed, phonology and grammar (I 2.3) constitute numerically a relatively weak field. Of general interest are Tesnière (1939) and Havránek (1933). Oftedal (1949) deals with the vowel system of a Norwegian dialect in Wisconsin, Filipovič (1960) with the phonemic analysis of English loanwords in Croatian. May we be allowed to refer also to another not West European but European author: Petrovici (1964), who recognizes phonemic versus allophonic interference and in (1957) analyzes the Slavic influence on the Rumanian sound system. Phonological transfers are discussed also by Philipp (1964). Cf. also Martinet (1939) and Itkonen (1965). For earlier publications see Vildomec (1963), for methodical discussions, also for morphology and syntax, Hasselmo (1967). Of methodical interest is also Titone (1961), who analyzes certain difficulties of Italians in the perception of foreign phonological features.

Problems of phonology and grammar are as a rule discussed less in individual works than as part of larger investigations or general surveys. For general discussions see Vildomec (1963), Schönfelder (1956), Carstensen (1965) as well as Martinet (1952–53), Pilch (1957–58). Mention can be made of Sommerfelt (1925) and Vogt (1949). As for syntax, the situation stated by Sørensen (1957:132) is characteristic of the present

holm 1963, typescript). *Lehnwendung* and *Lehnsyntax* are not included in this table. The majority of examples are from Weinreich (1953); Haugen, *Lg* 32.766 (1956).

state: 'it is usually impossible actually to *prove* that a syntactical loan has taken place, apart, of course, from cases where a word-by-word translation creates syntactical innovations in the translated version' (cf. above p. 492).

Interference phenomena have for the most part interested applied linguistics and language teaching; literary studies have taken a rather peripheral interest in them. An important exception has been Spitzer, "Sprachmischung als Stilmittel" (1923). In recent times, stylostatistic methods seem to result in the taking of loanwords as criteria for measures of style, for example by Anttila (1963) and Herdan (1963). Herdan (1965) analyzes the language mixture in Goethe's West-östlicher Divan. Stylistic aspects of linguistic borrowing are treated by Galinsky (1963, 1964) on the basis of American elements in German and in British English.

A popular theme in handbooks and surveys dealing with interference of grammar is that of gender. It would be an important task to make a comparative investigation of the gender of English loanwords in the gender-languages of Europe in order to study their morphological integration. According to Zindler (1959:18) most of the English words in German get the masculine gender. However, as in German, so also in Swedish, Norwegian, Danish and others with frequent English words, there is a considerable amount of fluctuation. A general tendency seems to be to adopt the article of the nearest native equivalent, cf. Carstensen (1965:66), Wacker (1965). Among recent literature on the influence of gender Öhmann (1968) may be mentioned.

In order to determine the structural criteria operative in interference, not only the cases where this actually occurs, but also those where a certain kind of interference is impossible are of interest. E.g. a loan translation in the case of *teenager* in German (German has now *der Teenager*), whilst interference makes Swedish *tonåring* possible (Oksaar 1961:391f.).

3.2.2.3 A particular kind of linguistic development has been called Pidgin and Creole. It occurs 'in certain kinds of social and linguistic contact situations, where media of wider communication come into existence which derive their vocabularies from one source but their grammatical structures from another' (Stewart 1968:539). Pidgin is the first stage of such a development, it is not native to the users; the further developed stage is Creole, with native speakers. The view that Creoles and Pidgins lack systems is now entirely antiquated.

The principles of creolization and older literature concerning 'makeshift languages' (Jespersen) by European authors are discussed by Vildomec (1963:92ff.). Emphasis is laid on the sociology of language and migration by Schultze (1933) in his analysis of — as he calls them — slave and servant languages. Hjelmslev (1938) shows in his grammatical characteristics that Creoles have not a minimum of grammar, but rather a theoretical optimum. Among Western European contributions to this section concerning cases outside Europe we find Le Page (1960) dealing with Jamaican Creole and Neumann (1966) analyzing the Chinese-Russian pidgin of Kjachta. Important studies of a European case have been made by Broch (1927a and b) — in the little

known *russenorsk* — Russian-Norwegian makeshift language, which is of special interest because of the fact that it is actively used only during the summers in a socially equal communication situation — and there since 4–5 generations. Neumann (1965) shows astonishing resemblances between Russenorsk and the Pidgin English of the Pacific on all levels of language. The tendency to abandon bound morphemes is well known; more research, however, must be done on the categories that are indispensable for communication. It is not difficult to find cases: new kinds of pidgins have arisen through tourism and foreign workers in many European countries (for special cases of language mixture see Stammler 1922).

3.2.3

As to the studies of the bilingual individual, the figures in Table 2 reveal a rather equal activity in case studies and questions of language progress; the latter a field mostly cultivated by psychologists.

3.2.3.1 In II.2 the majority of cases are observations of children. The standard, most frequently cited study is that of Leopold, 4 vols. (1939–49). This is a most detailed account of the first two years of a English-German child as to vocabulary growth, sound learning, syntax and morphology, with careful analyses of the interplay of two languages in the learning process of the child and the influence of bilingualism on all levels of language. The following conclusion may be emphasized: 'A bilingual child learns early to detach the phonetic words from the thing designated. Hildegard never clung to words as monolingual children are often reported to do. She did not insist on the exact wording of fairy tales. She often produced even memorised material with substitution of other words. I attribute this attitude of detachment from words confidently to the bilingualism. Constantly hearing the same thing referred to by different words from two languages, she had her attention drawn to essentials, to content instead of form.'[19] Pavlovitch (1920) also treats the general language development of the two first years of a child learning Sorbian first and then French. His aim, however, is not so much to study bilingualism as child language in general. Yet these detailed linguistic analyses may disclose the influence of bilingualism. Of the earlier works, Ronjat's (1913) German-French bilingualism study stands out because of its analysis of the child's growing consciousness of bilingualism and the conclusion drawn from the analysis of the parallel phonetic development that bilingualism does not retard the acquisition of a correct pronunciation.

As child language has been a field with particularly increasing achievements since the last war (see Ervin-Tripp 1967), we also find the most work done on child bilingualism in this period. Rūķe-Draviņa (1967) — one of the latest publications — frequently gives references to earlier publications, scarcely taking notice, however, of

[19] Vol. 3 (1949), 104, 179–82, 187. Volume 4 contains material of Leopold's two daughters from the age 2–15,7 and 2–8. For further literature see W.F. Leopold, *Bibliography of child language* (1952), cf. also his "The study of child language and infant bilingualism" (1948).

modern American literature on language development. Methodologically the study of her children in the preschool period is in the frame of earlier European survey works. More modern in techniques is Murrell's (1966) analysis of language acquisition in a Swedish, Finnish and English speaking environment. How one language becomes more prominent than the other and in three months can result in the loss of the first-learned language is recorded by Tits (1948) in the case of a six-year-old Spanish girl changing from Spanish to French. Among the recent publications Tabouret-Keller's (1963) analysis of language acquisition in a bilingual milieu is worth mentioning.

Though all the studies give impressive material, the diary method employed by many of them, or briefer sketchy descriptions of individual cases, are methodically questionable, especially while lacking 'control over elicitation situations, and measures of the reliability of observational categories' (Ervin-Tripp 1967:55). The majority of studies have not yet fulfilled the requirements made by research in language development that can be formulated as follows: 'sensitivity to linguistic theories, respect for the systematic nature of the child's linguistic knowledge, and emphasis on interferences about underlying structures or rules which lie behind the observed changes in verbal behavior' (Ervin-Tripp 1967:56).

3.2.3.2 The linguistic behavior of bilingual adults is analyzed by Vildomec (1963: 123ff.). Elwert's (1960) self-observation in *Das zweisprachige Individuum* discusses various linguistic and psychological problems on the basis of his own experience with Italian, German and English. Braun (1937) also presents a number of observations as to the distribution of the function of the single codes according to special spheres of the lexicon and to the situation; cf. also his concept of *Partnerzwang* (:126). An instructive survey is presented in this field by the American, Fishman (1965). The dynamics of a bilingual, dependent on the social and cultural adaptation of people speaking standard and dialect, is treated by Nuijtens in his doctoral thesis, *De tweetalige mens* (1962). The study, which combines linguistic, sociological and psychological aspects, is of general interest also from the viewpoint of the bilingual group.

The studies in this section give an instructive survey of the conditions and reasons for a bilingual's switching from one language to the other and of the roles which the languages play in his behavior. The topic, partner and purpose of communication are the reasons most referred to in the case of code switching, including purely linguistic factors and the concept of speech economy.

Hasselmo (1967) has especially treated the question of measuring language interference in the speech of bilinguals, giving many stimuli for future research. One question he asks is the following: 'Are integration and code switching really two distinct modes of behavior even from the point of view of the speaker's "intention"?' To answer these and similar questions we need many more case studies analyzing the functions of interference in a person's idiolect and paying more attention to the situation and the correlations between the linguistic and social dimensions of inter-

ference. There is a great deal of correlation between certain kinds of interference phenomena and the social factors of discourse: for example, the choice of the type of loan and the intimacy between the partners in the speech situation. Estonian bilinguals in Sweden who know each other well, do not use loan translations or other borrowed distributions as loan shifts from Swedish very often, but use borrowed identities instead. They interfere with Swedish words, often combined with Estonian morphemes. (Sometimes — as in the case of the Swedish word *bulle*, pl. *bullar* 'bun' — the plural form will be combined with the Estonian plural morpheme: *bullarid.*)[20] This tendency, however, decreases in relation to the decreasing degree of acquaintance. One reason for this, which many of them have given, is that they do not wish to be looked upon as affected, which would be the case if they were to create loan translations. In this case we can answer Hasselmo's question affirmatively. Further research is necessary concerning the behavior of a bilingual, taking into consideration such factors as prestige, need and other social indicators as well as emotive devices.

In this complex problem I want to call attention to a methodological point. In the case of speech we must always take into account the factor of performance, more than otherwise. When we observe that a bilingual speaker deviates from the norms of the language he is using, when he departs from the normal register, we must be careful not to interpret this at once as an interference. It can depend on extralingual factors influencing performance. — Summing up: whereas not a few authors deal with the child's way to bilingualism, the adult's situation has been less observed through single case studies. The following authors may be mentioned for certain observations. Schischkoff (1952–53) directs attention to cases in which an individual can become linguistically homeless in surroundings which are for her language foreign; an actual stage for many refugees.

Cornioley (1936) devotes a detailed study to written materials from a German-Swiss woman who spent 10 years in a French- and English-speaking environment. His conclusion: 'No phenomenon of disintegration becomes fixed to the extent as to exclude the possibility of a return to correct usage.' More studies, on a methodologically secure basis, are needed to open up this field.

3.2.3.3 As to 3–5, most investigations have been carried out by psychologists. We have classed here those primarily of linguistic interest, not being single case studies. The sample makes no claim to completeness, as subjectivity is connected with every choice. Some comprehensive studies referred to have instructive bibliographies. One of the best surveys of current problems of language acquisition and proficiency and the effect of bilingualism is to be found in Unesco 1965 (:139–83).

Macnamara's (1967a) paper is of general and methodological interest; it discusses methods of studying special aspects of bilingual performance and reviews several

[20] See Oksaar 1961:393. Cf. in modern Swedish: *babisar* (N.Pl), with English and Swedish plural morphemes.

authors in this field. A topic that has acquired interest is bilingualism and the first school language. Österberg (1961) discusses previous literature on the subject and presents his own experiments on the bilingual problem in Piteå (North-Sweden, dialect-standard). Among his conclusions is his opting for the dialect (home language) as the introductory language at school. An instructive analysis of the question, mother tongue as the first school language or not, is presented also by Hansegård (1968), who gives material on the Finnish-Swedish situation in North Sweden. Williams (1967) gives a useful survey as concerns Welsh schools.

Great activity all over the world has been shown in connection with the question of the effects of bilingualism.[21] The majority of the post-war experiments and investigations evaluate bilingualism positively, whereas earlier studies emphasized intellectual handicaps. The controversy is due to the methods used. As Williams (1967:16f.) shows, the negative results are in many cases due to unsuitable tests and the fact that many factors of obvious relevance in the environment have not been taken into consideration (cf. above p.482). To judge from recent publications on this question, such as Weisgerber (1966), who favors the negative results, it seems to have escaped notice that a reexamination of the Welsh data has given different results. 'The original investigation had indicated that the bilingual children were inferior to the monolingual in their scores. But the research worker reexamined the data, taking just one of the factors overlooked into consideration, the father's occupation. When care was taken that the occupation of the father in the bilingual sample equalled that in the monolingual sample, differences between the two groups just disappeared' (Williams 1967: 17). The discussion on the part of Western European linguists and psychologists is not finished yet. The concrete question, however in many countries, seems to change in the way suggested by Peal and Lambert (1962): instead of asking, 'Is bilingualism an advantage?' one is concerned with the question, 'Why does bilingualism bring advantage to the young child?'[22]

Of the recent publications we mention Wieczerkowski (1963). His comparative investigation of pupils in the German school in Finland and a school class in Germany leads to the following conclusion: 'daß intellektuelle Retardationen nicht in einem generellen Zusammenhang mit der Zweisprachigkeit stehen. Allerdings schien die zweisprachliche Leistungsfähigkeit durch einen analytischen Intelligenzfaktor begünstigt zu werden' (1963:165).

[21] The literature is summarized by S. Arsenian (1945), "Bilingualism in the post-war world"; his own standpoint is that 'bilingual children as compared with monoglot children of the same age and environment are neither retarded nor accelerated in their mental development' (73). Cf. also Weinreich 1953:119 and the excellent discussion, of techniques of investigation also, in Unesco 1965: 145ff.

[22] This Canadian investigation stresses the advantages of bilingualism. Cf. Unesco 1965:145: 'First of all it is granted that the influence of bilingualism on 'innate intelligence', the hypothesised level of inborn intelligence, whatever that may be, is not and cannot be affected. And even if it were we have no means of measuring and therefore no means of knowing what the effect might be. But when it comes to functional or operational intelligence opinion varies quite a lot.' To these problems cf. S. Arsenian, *Bilingualism and mental development* (1937).

3.2.3.4 Observations of aphatics give interesting views of the relative status of the languages and the factors that may put a language in a dominant position. Minkowski (1927), Pötzl (1930) and Leischner (1948) report various cases. Languages that had been used also in written forms — such as standard German and French — were, as Minskowski shows, recovered by Swiss bilinguals earlier than Schwyzertütsch (Swiss German) that was used only in its spoken form.

3.2.4

There is a considerable interest in minority problems and behavior of bilingual minorities throughout the period. The field as a whole is treated in several works. An important modern discussion is presented by Dauzat (1953) who analyzes the linguistic situation and the linguistic policy in various European states. He regards the progressively developing bilingualism and multilingualism as important factors in the future of Europe. The general background of the European situation up to the time after World War I is presented by Meillet (1928). It is important to notice his view that 'the linguistic state has often depended on the social state'.

European minorities are treated also by Auerhahn (1926). Catford (1957) gives an account of the linguistic situation in Scotland and parts of Northern Ireland. The language problem in Ireland is discussed by Dubner (1956). Gad (1957) presents the history of the situation in Greenland and deals with the language policy for bilingual Danish and Greenlandic. Language as a social and political factor in Europe is treated by Rundle (1946). His discussion of the effects of language difference on various points of international and social intercourse are important for the question of language policy.

Among the studies that analyze the bilingual group or society from the linguistic point of view is also Runeberg (1951). He shows that the Finnish type of bilingual society has special features, because of the fact that both Swedes and Finns have always been integrated parts of society.

There are various approaches to the analysis of the question of language usage in a society. Reimen (1965) describes language choice behavior in Luxemburg. His functional typology of usage is based on concurrent employment of languages. He distinguishes between 20 various functions for which more than one language can be employed (see also Cooper 1967). Language shift in a group (on the family level) is discussed by Selk (1941), who deals with the Danish-German situation south of the Danish-German border (standard German, Low Saxon, standard Danish, the local Danish dialect) also in (1937) (1940). Bilingualism and nationalism in multilingual states is surveyed by Kloss (1967a).

The problem of prestige as a factor in bilingualism is touched upon by most authors. Nesheim (1965) stresses the importance of social and cultural aspects of bilingualism for the understanding of the whole concept and gives instructive data from the Lapps. The question of the linguistic adaptation of immigrants is dealt with by Lozovan (1955).

A recent manual[23] on the situation of minorities in Sweden analyzes various problems from the social, linguistic, cultural, political and economic point of view. There arises a conflict when the right of the minorities to form national groups and to maintain their culture is stressed, while the role of language in this policy and creating possibilities of maintaining the minority languages is not taken into account. For earlier contributions in this field see Pritzwald (1938).

Educational policy has especially been discussed in bilingual countries such as Belgium, Ireland and others. Unesco (1965) gives the best survey of various teaching problems and methods, with ample literature. Cf. also O'Huallachain (1962) on Irish questions. The use of vernacular languages in education is dealt with by the Unesco volume of 1953, where, among other things, the planning and modernization of vernacular tongues is discussed by Sauvageot.

4

The above survey tried not only to give a sample of what has been done in the study of bilingualism, but also to lead on to the question: what remains to be done? For Western Europe, above all increasing interdisciplinary co-operation between linguists and social scientists is necessary, and advantage should be taken of the steadily refined quantitative and qualitative techniques of the various fields.

However, much remains to be done in linguistics too, in order to clarify the concepts required. Already the basic concept of bilingualism, interference as deviation from a norm, evokes a basic question, what constitutes the norm?

The complex of questions that arises from the study of bilingualism, being of vital interest also for general linguistics, was discussed in 1967 at the International Unesco Seminar 'The Description and Measurement of Bilingualism' in Moncton, Canada. From the summary of the achievements of this conference, where several Europeans also took part, I should like to cite a passage by the Chairman, William Mackey, that is topical for the directions of future research: 'We cannot measure interference until we can assign items to different codes. And we cannot do this until we know what constitutes the code of each language. But since the languages are in contact, the codes themselves are not stable and evolve rapidly within the same community, while varying in time and space within and between individuals. The analysis and measurement of such situations is far beyond the capacity of the conventional synchronic techniques of description and requires new theories and methods. It has been suggested that the elaboration of a sort of quantum linguistics, designed to deal with interrelated and evolving codes and norms is what is most needed.'

Another important point is that 'in the study of bilingual behaviour, we may need a concept of language proficiency quite different from the conventional notions of linguists and language teachers. We may have to describe proficiency in terms of com-

[23] *Svenska minoriteter*, ed. by D. Schwarz (1967).

municative competences, each for a specific function, while measuring the communicative efficiency of an evolving code.'

The study of bilingualism thus promises to open up entirely new vistas for linguistics.

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THE STUDY OF CHILD LANGUAGE IN EUROPE[1]

TATIANA SLAMA-CAZACU

I

It is often said that 'the dates' delimit but artificially the stages of human development. Yet, our historical thinking, shaped in the molds of education, feels the need of landmarking the moments of evolution — even as far as the dynamics of science is concerned — by setting some boundary stones to point out the beginning or the end of certain 'epochs' or 'sub-epochs'. And sometimes, if viewed retrospectively from quite a temporal distance, these landmarks do not appear in the least degree as artificial points of demarcation, but correspond to certain real changes.

Unfortunately, wars do mark such significant 'dates': namely, the First World War meant for Europe — and then for the entire world — a change; as did World War II. After and owing to them, science and technique assumed new shapes (let us not forget in particular the theory of communication and of information, that grew on the morbid trunk of the Second World War). Therefore, the starting point of the present study coincides only fortuitously with a fatidical number or with a 50 years 'jubilee', and the subdivision we shall make 'between the Ist and the IInd War' and 'after the IInd War' (and of these into decades) will not be factitious either.

1.1

A synthesis of the studies of child language[2] during the last fifty years — even for Europe alone — is not easily done. First and foremost because the bibliography is

[1] As no other material concerning the study of child language in Europe has been published up to now in the collection in which this chapter appears, we have considered it necessary — with the editors' agreement — to refer to studies published all over Europe (and not only in 'Western Europe' in the strictly geographic meaning) in the last 50 years (1920-1968, the last year being when this contribution was submitted for publication).

[2] Since in English we do not have two terms for the distinct concepts represented in French (and other Romance languages) by *langage* and *langue*, we shall be obliged to use the word *language* even when we are aware of an inadequacy of use (as it is the case of: 'the psychology of language', or even of 'child language', in some contexts). Therefore, when the confusion would be too pernicious, we shall translate French *langage* by *language*[1], and not always by *speech* (which would not imply also the other systems of signs besides the verbal ones, and which does not refer properly to the inner side of the psychical processes involved in language behavior or in the general act of emission and reception

rather comprehensive (especially if we refer, as we shall be doing here, not only to works of the linguists proper,[3] and to certain more outstanding works[4]). On the other hand, because such a comprehensive study has never been done up to now; the several existing syntheses refer either to previous periods, or are merely partial (encompassing a given period of time or a certain geographical region or a certain domain — either psychology alone, or linguistics only or preponderantly so, etc.).[5]

1.2

For a better knowledge of the language phenomenon in general, we have much to learn from the study of child language. But we still have a lot to learn ABOUT child language itself.

Nowadays it has become obvious that the study of child language is both necessary (for a precise statement of the peculiarities of this phenomenon) and useful in clarifying certain aspects pertaining to other domains and, among others, to general linguistics.

Besides the fact that many European linguists have turned with interest towards the study of child language per se, there have been also some — and among the best known — who underlined clearly the importance this field has for linguistics.

At the beginning of the period we shall deal with, O. Jespersen, dedicating one chapter of his work on general linguistics to child language, wrote: 'This study seems to me very fascinatory indeed, and a linguist is sure to notice many things that would be passed as uninteresting even by the closest observer among psychologists, but which may have some bearing on the life and development of language' (Jespersen 1959:8; the 1st ed. dates from 1922). In another country, M. Pavlovitch (1920:2) also stressed that the approach of this field becomes 'a study indispensable for linguistics, as the key to the development and changes in the languages'. Somewhat later, R. Jakobson

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through various means of communication; moreover, it has become in some texts the usual correspondent of the Saussurian *parole*). *Language behavior*, in its turn, is a term too specialized for our needs.

[3] We shall not consider only linguistic works proper or those written exclusively by linguists. Especially in this subject, it is difficult to make a clear-cut distinction between 'what is linguistic', 'what is not linguistic', what is or what is not interesting for linguistics (first of all, the consensus in this respect being far from unanimous, it would seem that we have left aside either too much or too little). As a matter of fact, it is difficult to say what is linguistic and what is not in child language$_1$, for another reason: usually, those who worked with an isolated case (with facts pertaining to *parole*) were the linguists, while many psychologists recorded, on the contrary, data from a certain number of children.

[4] We have found it useful to include in our survey as well less important works which deal directly with child language, also less known but interesting contributions, and works by outstanding specialists, in which the authors refer among other things to child language also, etc.

[5] Some useful surveys published by W.F. Leopold (1948, 1952, 1959), K. Ohnesorg (1960, 1962, 1964a, 1967b), A. Luria (1959a), A. Raevskij (1958), R. Natadze (1957, 1966), D. Slobin (1966a, 1966b, 1966c, 1967) — for Soviet psychology —, D. MacCarthy (1952) — for the bibliography of works written in English, especially from America —, F. Richter (1927), etc.

([1939], [1941] etc.) would demonstrate this fact through his works and would even apply and verify the new principles of phonology in investigating child language; 'the conclusion was that child language — much the same as aphasia — might and ought to be incorporated into general linguistics' (Grégoire 1949–50:356). J. Vendryes (1953:27), on reviewing one of M. Cohen's articles (1952), concluded that 'l'étude du langage enfantin est pour le linguiste d'une importance capitale', because the path followed by mankind may be observed 'en raccourci' in the child. M.Cohen himself has maintained the usefulness of these studies for general linguistics, both by the methodology of some of his works — in which facts from child language are confronted with linguistic phenomena noticed in various languages — and by repeated assertions (requesting, among other things, even the establishment of chairs for the study of child language (Cohen 1951a:65)).[6] One of A. Meillet's disciples, A. Grégoire (1949–50), author of one of the best books on child language, using a rigorous linguistic method, asserted (taking up one of A. Busemann's formulae applied to Grégoire in 1937) that 'the scientific revival of "child-linguistics" ("linguistique enfantine")' had begun. This idea of a 'revival' was later on taken up by K. Ohnesorg (1955b:95; 1962), who even proposed the term 'pedophonetics' or 'pedolinguistics'[7] (Ohnesorg 1955b:95), concluding that 'pedolinguistics may substantially contribute to the study of general linguistics' (Ohnesorg 1955b:101, 1959a:149, 1964b, 1964c).

These ideas have become current nowadays; however, truth found its way but gradually into the mind of a great number of scientists, until it became characteristic of our epoch. The impetus has also taken hold of the researchers across the ocean, where child language investigation, at present mostly through the generative-grammar methodology, has become a vogue that will probably also lead to a real and thorough understanding of child language features.

Yet, to reach this point, much time had to elapse. Let us now analyze this path — strewn with attempts and enthusiasm for investigation, by success and jeopardized hypotheses, by the tendency to accumulate facts or perhaps, on the contrary, towards premature generalizations. It is a path characteristic of European scientists, since American researchers — particularly the linguists (the bulk of investigators as well as their outstanding exponents) — were won over to this study somewhat later.

II

Let us first point out the main landmarks, the general frame of development in this field, and then proceed analytically, fixing within the picture of each decade the names

[6] Regarding the opinions expressed by M. Cohen (1952), a reviewer of his article said that on the basis of a 'huge mass of facts, scientifically established and controlled, it will become possible to draw from child language$_1$ precious knowledge for general linguistics' (Wiblé 1954:75).

[7] 'Pedocommunication' might be a more comprising denomination; but Ohnesorg's term shows, precisely, not only the interest that the Czech phonetician finds in child language for linguistics, but also its place in this science.

and the works, those which are most prominent as well as those of minor importance (which nevertheless help to outline the images in these pictures).

2.1

The fact that child language is worth studying has become evident (and this evidence had materialized in the very first attempts of investigation)[8] in Europe particularly towards the end of the 19th century.[9]

Somewhat later, importance began to be attached to the study of child language with respect to what it might yield for a deeper understanding of the general mechanisms of language, or for the general characteristics of the 'language' (Fr. *langue*) phenomenon itself. And it was particularly through these interests that psychologists (congruent in the main with the psychological point of view) and linguists (in their turn intent on the linguistic one) drew nearer together. The observation of one's own child seems to be the most frequent device: certain researchers are attracted by bilingualism (such as J. Ronjat 1913, a promotor in this field, without whom A. Grégoire would be more difficult to understand) or by language facts from a less known linguistic area (I. Georgov 1905, 1908, 1912; cf. Leopold 1952:3, for Bulgarian, for instance; or E. Tappolet 1907, *ibid.*:94–5, for the Basel dialect, etc.). A number of studies have been the result of the practical interest in speech disorders, in the re-education of deaf-and-dumb children, in the severe pathology of aphasics (H. Gutzmann [1931 2nd ed.; 1894], etc.).

2.2

In the 1920s, shortly after the First World War, important works came into circulation which were, however, either initiated during the pre-war period or bearing the mark of previous formation — or reprints of some older books (as for instance those of Van Ginneken 1917, 1924, or O. Jespersen [1922], 1923, or C. and W. Stern 1928, 4th ed., etc.). An increased interest is taken in cases of bilingualism (first M. Pavlovitch 1920, then others, such as A. Grégoire 1933 — whose works would appear also later, in 1937, 1947), making use of a linguistic method, sometimes of phonetic transcriptions (as in A. Grégoire's excellent monograph).

In general, the same procedure of observing certain 'cases' is used (and these are mostly provided by the linguist's own children). But studies of synthesis are not missing either, which discuss certain principles or some general tendencies of the

[8] As usual in the history of science, there existed also sporadic preoccupations: and the first name to be cited seems to be (cf. Leopold 1959:191) that of D. Tiedemann, in 1787.

[9] Let us mention, among the pioneers of this epoch, also Baudouin de Courtenay, with a study of 1870 (cf. Leopold 1959:209).

evolution of child language, and which are worked out on the basis of bibliographical data or on the author's own observations: from O. Jespersen to H. Delacroix (1921, 1924, 1933, 1934), from K. Bühler (1926, 1930) or Ch. Bühler (1930), to O. Decroly [about the year 1930].

But, still in the early twenties, certain quite new preoccupations became evident and inspired even some of the works that had been begun before. Besides 'inventory' monographs where the descriptive effort or interpretations belonging to outdated phases in linguistics or psychology prevailed (as in Clara and W. Stern's book), besides works of mere psychological analyses or of discussions on an exclusively speculative psychological level (concerning imitation, for instance), besides works of a psycho-pedagogical interest, we find also works in which the old question of the logico-grammatical parallelism is tackled through new procedures or by more subtle interpretations of the relationship between thought and language (an old Leitmotif of the works of J. Piaget, of O. Bloch 1921, 1923, 1924; of P. Guillaume 1927a, 1927b; of H. Delacroix 1924b; of L. Vygotskij, see the 1956 ed., a.s.o. — that has come down to this day without turning obsolete). Elaborated chiefly by psychologists, these works are not always very concrete, and sometimes quite far from being analytical studies of language — with the exception, perhaps, of those of Bloch and Guillaume.

There had been, of course, also certain psychologists who recognized the necessity of approaching the linguistic aspects or of using a method to suit these aspects. But we can easily trace in their attempts the limits of self-education in this field (as in the case of the Sterns). The necessity was met by the collaboration, on an utterly exterior level, i.e. by means of groups where papers were delivered or by publishing articles written by psychologists, but also by linguists, neurologists, etc., in collective volumes (such as the special issues of the French *Journal de psychologie*).[10] The linguists, on the other hand, also could not give a sufficiently thorough interpretation of the facts from the point of view of the psychological age-peculiarities of the child, and the exposition of their results often incites questions as to the generalizing value of the data gathered by observing one or several 'cases' (as, for instance, Grégoire's monograph, remarkable for its method of minute linguistic analysis and for its wealth of material — collected, however, only from his own two children).

The inceptive innovation in the linguistic analysis of child language (with bearings also upon the physiological and pathological plane) was marked by R. Jakobson's first publications [1939], [1941] in this field. It is by him (much more than by Grégoire, who thought — 1947:345 — he had done it himself), that the method of phonological analysis was introduced in the study of child language: in fact, it is the structuralist trend that penetrates here (much more than through Gestalt psychology). But the ideas and analysis suggested at that moment would not yield fruit at once: the more so as the Second World War was just breaking out.

[10] The 1931 issue became a lassic' (see *Psychologie du langage* 1933).

2.3

After the Second War, the upsurge was manifested chiefly by the linguists, some of them following the path opened by R. Jakobson. Around the end of the decade and into the 1950s, minute studies came out: A. Grégoire (1947, the final part of his monograph), A. Gvozdev (1949), L. Kaczmarek (1953), K. Ohnesorg (1948a, 1948b, 1959a, etc.).

Some psychologists, linguists, or pedagogues now continue dwelling on older problems or approach them from the same old points of view, or evince more marked preoccupations for the aspects concerning practice (i.e. studies on the language$_1$ of deaf-mutes: P. Oléron 1957 etc., B. Tervoort 1953 etc., and others). The relation between language$_1$ and the whole development of the child is part of the same psychoeducational preoccupation (A. Luria 1955 etc., and others), which is particular especially to the Soviet school (where, for a time, the Pavlovist conception of the high nervous activity and the development of the two signaling systems had also been manifest; see also A. Luria 1959a).

The methodological lines represented by psychology on the one side, and linguistics on the other, still keep apart, with certain exceptions. Some research-workers (Slama-Cazacu 1956a, 1956b, 1957a, 1957b, 1959, 1961b, 1965a, 1966f. etc.) — aware of the necessity of both approaches, or rather of the necessity of combining them, as well as of replacing the case-oriented method by studies carried out on the large number of children that should allow generalizations — do try to surpass both mere linguistic inventorization and exclusively speculative psychological analysis. The above-mentioned author publishes works based on such an approach, in the domain of the relationship between thought and language, or less studied themes are sought, such as children's dialogue, the style of child speech etc. The analysis effected on such bases coincided also with the spread of the term 'psycholinguistics' in the U.S. (see Osgood and Sebeok 1954).

Gradually, the new linguistic methodology begins to yield results, the proper linguistic studies contain more accurate notations, make use of a firmer method of analysis or broach new topics (e.g. K. Ohnesorg's second monograph, W. Kaper's studies, V. Rūķe-Draviņa 1963, 1967b, and others); structural analyses appear, and the influence of the theory of information or of generative grammar makes itself felt.

One may say that in the '60s a smaller number of important detailed studies appeared in Europe than across the Atlantic (yet among these studies there are vaster and more remarkable monographs, as for instance those published — from among the linguists — by V. Rūķe-Draviņa). Although almost as late as 1960 the opinion had been expressed (Leopold 1959:193)[11] that the moment was not yet ripe for a general view and that it was good to keep on effecting detailed studies and gathering material (somehow

[11] 'In der Kindersprachforschung ist die Zeit für eine zuverlässige zusammenfassende Darstellung noch nicht gekommen. Wir stehen noch im Stadium, in welchem weiteres Quellenmaterial in der Form von Einzelstudien benötigt wird.'

on 'cases'), nevertheless the procedure of collecting data changed somewhat (the more so due to increased use of the tape-recorder and progress in the methodology of applied linguistics). To the investigation carried out on a great number of children — relying on psycholinguistic methodology as well as on technical devices such as portable tape-recorders — and to the study of new aspects, as for instance children's dialogue (Slama-Cazacu 1961b, 1966e, 1968), were added complex research, in teams, on a great number of subjects. Projects were drawn up for the elaboration of corpora from English, French etc. (see *infra* 3.5.3) or for international cooperation (among Czechs, Frenchmen, Italians, Poles, Romanians, etc.) in order to study the formation of the child's phonemic system (see Slama-Cazacu 1966f, 1967d), to achieve a thorough knowledge of the child's vocal emissions during the first year of life. Some of these works are conceived along modern linguistic principles, and sometimes along the principles of generative grammar (in this latter case, however, not always creatively, but rather as a simple application of the American experience in generative grammar or of a certain method connected with the name of a certain author).

In their turn, the psychologists began to familiarize themselves with modern linguistic conceptions and attempted to put into operation the methods of linguistic analysis. However, until now it cannot be asserted that in Europe the psychologists have succeeded in working out original studies on child language by using these linguistic methods. And on the other hand, the proper psycholinguistic integration still is at an incipient stage in which, for many European psychologists, the proper object and the aims of psycholinguistics are not clearly defined.

The modern scientific concern for an interdisciplinary approach or for one from multiple angles is reflected in the study of child language too; to these one may add the tradition of cooperation, in the field of language or generally in communication, of certain psychologists, linguists, neurologists, sociologists, 'defectologists', technicians etc. Hence, the publication of collective volumes, which deal with child language from several standpoints (e.g. *Bulletin de psychologie* 1966, 19, nos. 8–12, under the editorship of P. Oléron), or international meetings where child language is being discussed by specialists in various branches.[12]

The practical need engendered research in educational psychology (on the teaching in schools of the vernacular or of foreign languages, on reading and writing, on the oral and written language of children etc.), or logopedics and 'defectology' (mention must be made in this respect of the special logopedic and 'defectologic' schools in the Soviet Union, Czechoslovakia, the Netherlands, Poland etc.).

It might seem that right now a significant threshold is being crossed: one anticipates important new studies. We must expect the new, original studies of the '70s to emerge from the confluence of psycholinguistics, generative linguistics, Piagetian psychology,

[21] The 18th International Congress of Scientific Psychology — Moscow 1966, the 10th International Congress of Linguists — Bucharest 1967, the 6th International Congress of Phonetic Sciences — Prague 1967, etc.

present-day social psychology, the tendencies and problems raised by applied linguistics (especially those concerning speech pathology and the various methods of foreign language teaching).

2.4

As far as the geographic map of linguistics in Europe is concerned — from the point of view of the 'sources' or of inventorization of the various forms and peculiarities connected with the respective language — one may say that it is getting filled in. To previous studies, for English, French and German, and the sporadic ones for Bulgarian (I. Georgov), Danish (O. Jespersen) or Dutch (J. van Ginneken) for instance, new ones have been added after the First World War, containing material on:[13] Danish (O. Jespersen 1923), Dutch (J. van Ginneken 1924), Hungarian (E. Kenyeres 1926, 1927 etc.), Polish (S. Brenstiern-Phanhauser 1930), Russian (N. A. Rybnikov 1926a, 1926b, 1926c, 1927, and others), Serbian (M. Pavlovitch 1920) and in general for English (M. Lewis 1936 etc.), French (O. Bloch 1921, 1923, 1924; M. Cohen 1925, 1933; O. Decroly; A. Grégoire 1933, 1937, and others), German (C. and W. Stern, 4th ed. 1928, and others). And after the second World War, containing material on: Czech (particularly K. Ohnesorg 1948a, 1948b, 1955a, 1959a), Dutch (W. Kaper 1959, 1967), Finnish-Swedish (B. Malmberg 1945), French (M. Cohen et al. 1952, 1962; A. Grégoire 1947, 1948, and others), Italian (P. Fronzaroli 1957; W. von Raffler-Engel 1964c etc.), Lettish (V. Rūķe-Draviņa 1959b, 1963, 1965b, 1967b), Polish (L. Kaczmarek 1953, and other psychologists and linguists), Romanian (T. Slama-Cazacu 1956b, 1957a, 1957b, 1961b, 1962a, 1962b, 1966f, etc.), Russian (A. Gvozdev 1949, K. Čukovskij 1955, and others), Serbo-Croatian and Slovenian (D. Kostić and M. Stošić 1963; M. Vasić 1965 etc.; M. Mikeš 1964, 1967, etc.).

III

After this general view — in which we have mentioned primarily the authors who made themselves conspicuous either by the number of works in our domain or by the importance of their contribution —, we shall proceed to follow chronologically[14] and, as much as possible, exhaustively, the history of research into child language beginning with the 1920s.

[13] Naming, for each language, several more important authors (or the only one) of works constituting 'sources' of data.

[14] Aiming especially at a better appraisal of the historical lines of evolution in this domain, we adopted the criterion of chronological order. This criterion will prevail not only in the division into decades, but also within the categories or domains. The distribution of the works into the subdivisions of each decade has been done according to the criterion of each author's constancy of interest or according to the number or the importance of his works in the respective period.

We shall not be able, of course, to offer here analyses of the various works, but only to classify their topics, to find their niche in time and in space, and give for some of them a general estimate of the place they hold within the history of their respective problem. For complete bibliographical data we shall refer to the Bibliography[15] at the end of this work (which comprises European studies issued after 1920, with the addition of some works — published either outside Europe or prior to that period — which were included due to their importance or to the fact that they give bibliographical indications).

3.1 *1920–1930*

3.1.1 Towards the beginning of the third decade, three European linguists — of whom two have entered the Pantheon of linguistics — expressed a strong interest in child language: J. van Ginneken, O. Jespersen and M. Pavlovitch.

O. Jespersen [1959] dedicated to the 'child' a chapter of his well-known volume *Language*[16] (first edition 1922), where he expounded the result of some personal as well as other investigators' observations on children speaking Danish and English and included, synthetically, problems which he himself called 'fundamental'; a special paragraph was dedicated to the child's influence on linguistic change. Shortly after this work, he published in Danish (Jespersen 1923, 1st ed. 1916) a monograph on 'child speech' (containing the material he had presented in *Language*, with examples in phonetic transcription). Several years later, Jespersen (1927) published an article in which — treating the relation between the individual and the linguistic community — he also entered upon a discussion of the problem of a child's acquisition of the language of the community (firmly underlining that the influence of physiological and psychological heredity in language is minor and almost negligible,[17] the fundamental factor being, in a proportion of 95%, imitation: p. 578). An idea that deserves mention here is that, as a matter of fact, a community is represented by individuals, and that the child comes into contact with (and consequently imitates) but some of these individuals, i.e. 'parlers individuels'.

It seems that J. van Ginneken (1917, 1924) had a particular preference for the 'Novel of a child',[18] a book rather seldom mentioned nowadays (much the same as his

[15] In order to have a personal control over the classification and appreciation of the works, their majority were consulted directly, except for a few which could not be obtained and which are mentioned indicating the source of information. Whenever evaluations are made on these works, the source of the comment is cited (at any rate, none of the works mentioned in subdivision 1. of each decade belongs to this category, all these works having been consulted directly).

[16] Leopold (1959:192) is particular about stating that 'Jespersen ist der einzige Verfasser einer Einführung in die Sprachwissenschaft, welcher der Kindersprache einen Hauptteil seines Buches widmet'.

[17] Compare it to the idea expressed (with a profusion of technical biological arguments) by van Ginneken (1933), about the heredity of 'the basis of articulation': the organs of articulation differ with various races, parents transmit hereditarily these differences — whence a certain orientation is impressed on the physiology of articulation.

[18] Leopold (1952:32): 'favorite work of the well-known general linguist'.

second book, of 1924),[19] which offers, however, rich material for the Dutch language (in a graphic technique that delights by its modernism). In 'A child's discoveries', a book of smaller proportions, issued as a part of a collection van Ginneken was editing and dedicated to the relations between the individual and society, the present-day reader may be attracted both by the wealth of examples (taken mostly from Keesje's language again) and by certain problems that reveal the psychological knowledge, the originality and the innovatory spirit of this outstanding linguist (to give but two examples: the problem of empathy, or that of the development of the dialogue — an aspect very little studied for as long as several decades after the appearence of van Ginneken's book, see *infra* 3.5.1, Slama-Cazacu 1961b).

There are not a few European linguists[20] who — irrespective of the value and scope of the works they published in other domains — have made themselves known particularly — and very early in their career (i.e. while still young parents, fascinated by the 'subjects' under their daily observance) — through the studies they wrote on child language. In the course of this chapter we shall have the opportunity to mention also other names (A. Grégoire, K. Ohnesorg, L. Kaczmarek, etc.); let us open this series with M. Pavlovitch (1920), whose book — quite well known in Europe, owing to its being published in French[21] — exposes observations made on a Serbian child (Douchan), during his parallel acquisition of Serbian and French. The study of a case of bilingualism occasioned the author — as he himself stated — to give an answer to the question of 'heredity' in language: the 'physiological voice', the cries constitute only a basis, which is conditioned however by the function of communication with surrounding persons and stabilized by imitation. The evolution of language$_1$ is watched — with a linguist's method, to which ideas or interpretations belonging also to the psychological theory of the epoch were added ('the verbal image', 'the faculty of imitation' etc.) — in the grammatical aspects (syntagmatic relations and the sentence), as well as in the phonic and lexical ones.

The decade is marked also by writings of psychologists: firstly by an author who was then ending his activity, W. Stern (in collaboration with his wife), and by another one who was starting it, with brilliancy, J. Piaget. Of Clara and W. Stern's works, let us mention *Die Kindersprache* (1928, 4th revised ed.), a fundamental book, that has preserved its value as a first-rank source in the field.[22] Owing to the wealth of material and the accuracy of its recording (though not in a phonetic transcription), and owing to the careful notation of the date of appearance of each form (a preoccupation which

[19] For the author of the present study, these books, published in Dutch, are quite recent discoveries.

[20] In America, in the past, we know of few cases among the most important linguists, especially W.F. Leopold; for a long time, child language had been the domain of the psychologists almost exclusively.

[21] One year after its appearance, the psychologist H. Delacroix (1921) reviewed this work in *Journal de psychologie*, asserting that its author is 'informed in linguistics and in psychology'.

[22] 'The most authoritative book on child language' and 'an epoch-making work', as Leopold calls it (1948:5 and 1952:91); while Tervoort [n.d.:22] considers it 'still a classic', although 'antiquated'.

until recently reflected a predilect problem of the study of child language), this book is even today one of the most useful 'inventory' works on the vocabulary and grammatical forms of child language in German (except for the phonetic level analysis, which is less satisfactory). The book has been consulted and probably has furnished a guide and impulse to generations of researchers (the first edition appeared in 1907). The third part of the book is entitled 'The special linguistics of child language', yet the authors' endeavours for a linguistic elaboration and interpretation of the material cannot satisfy nowadays: the main preoccupations are directed towards the illustration of 'the laws' of phonetic change. And this part which ends the book (the subtitle of which announced a 'sprachtheoretische Untersuchung') does not contain any theoretical conclusion whatsoever, not even a synthesis.

Sterns' works were re-publications; the most important new book, that was a young naturalist's remarkable debut in psychology and that had a resounding echo, was J. Piaget's: 'Language and thought in the child' (1923b). The book does not contain material to be used as a source proper for child language and, at any rate, does not offer any linguistic analysis; the primary aim — which the great psychologist never left out of view — was finding a solution to certain problems of genetic epistemology, with him watching first and foremost a child's thinking.[23] Piaget suggested there the method he called 'clinical', that is to say, a talk with the child under conditions of organized observation, letting him speak (and watching in this way his thinking: speech is therefore recorded not so much as an aim in itself, or it is studied tangentially). Methodologically important is also the fact that the material was not taken from a 'case' (the author's children, as in other contemporary researches), but from several children who had been watched under the conditions of a pre-school institution. The central idea of the book must likewise be pointed out, for it aroused critics, and, in general, heated discussions, and because it gave birth to other investigations which aimed at supporting or fighting its fundamental thesis:[24] namely, the idea of egocentrism dominating child's language and thinking, 'the social life proper being non-existent up to the age of 7–8' (2nd ed.: 58).

[23] When speaking about this book one often overlooks that its complete title was: 'Studies on child logic'; the same was the aim of the book 'Judgment and reasoning in the child' (Piaget [1924]) — although it contained, for instance, a chapter entitled 'Grammar and logic' —, or an article dwelling on 'A verbal form of comparison in the child' (Piaget 1923a).

[24] W. Stern (1928:143ff.) considered it necessary to refer to this idea in a new edition of his book on 'Psychology of the small child', Delacroix (1934:99) discussed it critically, Vygotskij and Luria [1930] devoted a paper to it for a congress (see *infra* 3.1.2.), etc.; quite recently, the author of the present study (Slama-Cazacu 1961b), noticing the overwhelming presence of the communication function in the language of children at an early age, has considered this idea critically, and not as an obsolete thesis but as one of a virulent influence, though its promoter does no longer uphold it. The large proportion of 'egocentric speech', revealed by Piaget or others, might be due both to special conditions of education and to the interpretation of data (as for instance the way in which the different terms used by the author himself are defined), and to the methodology an author had been using (it is not certain whether the collaborators of Piaget, on whose observations he relied, had always noted exactly all the mimico-gestual expressions that accompanied verbal expression, showing that, as a matter of fact, it was addressed to someone, in the respective situation).

Clara and W. Stern's book is still looked upon as a 'classic': it contains material which is indeed precious for child language studies; but the linguistic theory and even the psychological one, on which it is based, belong to the past of these sciences, even if we consider them from the perspective of the twenties. Piaget's book does not contain language 'material' proper or a linguistic elaboration, and its interpretations and conclusions dissatisfied many research workers and were later partly refuted by the author himself; but the book (holding, together with its reverberations, an important place in present science) integrates perfectly into the vast and very up-to-date work of an author who is 'modern' through his personal conception — which he has been steadily perfecting — through the school created by him and through the influence he is still exerting (sometimes even in aspects he himself reconsidered, as for instance the thesis of the egocentrism of child language). The general influence of the author's works makes the volume to which we have allotted so much space here, and which contains few 'facts' from child language, one of the fundamental books of the decade, its echo coming down to the present day.

On an intermediary line between the Piagetian method of elaborating the material, and that of the Sterns, there are O. Bloch's and P. Guillaume's works on child language: without confining themselves to a mere inventory of the facts of language and without sticking to rather outdated linguistic interpretations, the two authors have collected interesting material and have interpreted it also from the point of view of the way in which a child's thinking possibilities are reflected in his language, especially at an early age. O. Bloch had published, even before the First World War, a valuable study on the acquisition of consonant articulation in French (Bloch 1913). Three articles subsequently published (Bloch 1912, 1923[25], 1924), based on the observation of his three children, offer a subtle analysis of 'The first stages of child language', in the acquisition of the vocabulary (as far as pronunciation and meaning are concerned: syllable doubling, analogy, contaminations, 'crossing of words',[26] homonymy, etc.) and of the sentence (especially with interesting remarks on the values children attach to grammatical tools, on the liberty of using word order, on the 'language of action', etc.). An idea Bloch wanted to underline was that the sentence may develop also independently of grammar learning, the child expressing his thought, owing to a conscious effort, even before disposing of all the grammatical devices (Bloch 1924:31, 43).

The important French psychologist P. Guillaume has not published much in the domain of child language. However, his two articles (Guillaume 1927a, 1927b), devoted to certain grammatical aspects and particularly to the sentence, as well as his book about 'Child imitation' (Guillaume 1925) — where he dwelled also on 'vocal imitation' — contain interesting ideas and a subtle psychological analysis. 'No imita-

[25] The fact is worth mentioning that in the discussions that followed the oral presentation of the paper which forms the basis of this article took part, among others (and proving thus their interest in child language): M. Cohen, H. Delacroix, H. Piéron, H. Wallon.

[26] Among others, the charming coinage *Bonémifas* (name given at the age of 5 and a half, to the rabbit *Boniface*, after *do-ré-mi-fa* (Bloch 1921:702)).

tion is completely passive. First, a selection takes place, the child does not reproduce indiscriminately everything he hears' (Guillaume 1925:24): this is one of the central ideas of the book on 'Imitation'. And the author completes it with the modern idea that: '[The child] constructs, with the resources of his vocabulary, and along the model of the expressions that he tends to reproduce: it is this acquisition of devices that we wanted to describe' (*ibid.*). The same idea, of the active attitude in language learning, is stressed in another place, too: up to a certain point, learning a language means rebuilding it, creating it anew (hence, for instance, the 'regularization of irregular forms'); from this point of view there is indeed a relation between child language development and the history of languages (Guillaume 1927b:228).

3.1.2 In this decade, A.R. Luria began to publish his first studies on speech, either from the point of view of the relations between speech and intellectual development (Luria 1928), or from the viewpoint of the development of both processes, observing comparatively town, country and vagrant children (Luria 1930); or still, from the point of view of the genesis of writing in the child (Luria 1929). Together with L.S. Vygotskij, he delivered a paper at the Ninth International Congress of Psychology in 1929, in which the two young psychologists presented the results of their experiments, demonstrating — as a reply to Piaget's thesis (1923) — that the egocentric language has an organizing function in child's activity and that it is gradually changing into an inner speech, likewise an organizer of behavior (Vygotskij and Luria [1930]).

A series of studies, important for the inventory (of vocabulary, in particular) of child language in Russian (its increase according to age and environment, cf. Luria 1959a), were published or edited by N.A. Rybnikov (1926a, 1926b, 1926c, 1927). Let us remember, besides them K. Čukovskij's (1924) first studies in which the latter displayed his interest in the 'pearls' of child language.

Observations on her two children, concerning phonetics, morphology and syntax in Polish, were published by Stefania Brenstiern-Pfanhauser (1930), who bestowed a particular importance on bibliography as well (occupying approximately one third of the work). In the same period, E. Kenyeres (1926, 1927) published studies on the acquisition of Hungarian by a little girl up to the age of 7 (with a special view to vocabulary and certain grammatical forms); one interesting idea, maintained by Kenyeres (1927:209ff.) is that the use of a word by the child does not imply his also possessing the respective notion: hence, more interesting than an establishment of the number of words, is the analysis of their sense for the particular child.

Several well-known psychologists and linguists also approach child's speech: some of them produce a book or an article in this field (H. Wallon 1924: about integration with children;[27] David and Rosa Katz 1928: an original book, based on talks with

[27] In which the well-known specialist in child psychology asserted that: 'Regardless of how often words would be repeated to the child, or even by the child himself, they have not the strength to impose their meaning on him, unless the appearance of the corresponding notion arouses the need to use them by himself in a correct way [...]. What the child would not be able to search for by himself, remains unknown to him' (Wallon 1924:171).

their children aged 3 and 5, in which a content analysis of the dialogues — unfortunately, not also a linguistic one — is made, underlining the important idea that 'the dialogue is the most natural and also the most important form of intellectual development of the child': p. 13). Others deal with this problem in handbooks or monographs on general problems of language$_1$ (Vendryes 1921, casually, mostly with a view to affective speech), or on the general development of the child (Alice Descœudres [1922?] and 1924 — on a child's development from the age of 2 to 7, and a study dedicated directly to the tests for measuring or evaluating child's speech; Charlotte Bühler 1930, 2nd ed.: in the frame of general development, a synthetic view of speech, especially at the age of one and then from the age of 2 to 4; K. Bühler 1922 3rd ed.: several interesting remarks — examples of lexical creations, the relationship with thinking etc. — in some way non-systematic, in a large synthesis, of which one must note the stress on the necessity to render accurately the sounds produced by children: p. 225).

A psychologist (H. Delacroix) and a linguist (M. Cohen), who would be known later for their unfailing interest in child speech, now started publishing in this field. H. Delacroix (1921, 1924 a-b), besides a minute review of Pavlovitch's 1920 book (1921), published in an article devoted to 'The linguistic activity of the child' and in his book on 'Language and thought', fragmentary remarks and interpretations rendered in a lapidary form[28] and in an exquisite style, relying almost exclusively on material collected by other authors. In the volume published in honor of Vendryes — significant if we refer to the interest manifested for child language by this linguist[29] — M. Cohen (1925)[30] contributed an article on 'The successive languages of the child' (based mainly on the observation of his own three children). He stressed an interesting fact, worth being reappraised today: the child passes through a series of 'successive states of language', that constitute small systems, some lasting only a few days, so that the development of child language$_1$ consists of a series of substitutions of 'languages (:109–12); his conclusion was that a complete inquiry could show the value that the method of following these successive systems has for historical linguistics. (One may already notice M. Cohen's preoccupation, that he would manifest again, with the methodology of the study of child language — he also underlined the necessity of observing more children — and for drawing certain conclusions bearing on linguistics.)

3.1.3 Sporadic concerns for child language$_1$ or tangential discussion on it may be signaled also in other works of the same period. J. Rozwadowski's (1921) contribution on 'The apparition and development of language$_1$'; an article by A. and G. Hoyer (1924), about a child's first speech attempts (*Lallsprache*), using however no phonetic

[28] Regarding 'invention in language', he expresses the following idea (which may be compared to that enounced by Wallon, see *supra*, note 27): 'On ne fabrique pas ce qu'on n'a pas besoin de fabriquer' (Delacroix 1924a:16).

[29] See *supra*, 1.2.

[30] Who 'got initiated into child language at the course of lectures delivered by his professor Jules Ronjat' (cf. Wiblé 1954:75).

transcription; a book by A. Busemann (1925) on 'the language of youth as an expression of the rhythmics of development'; and an article by H. Fuchs (1927) (an analysis of the diaries of young people — on the basis of K. Bühler's theory on the fundamental functions of language: *Kundgabe*, *Darstellung* and *Auslösung*, making use also of statistical procedures); another article by H. Hetzer and B. Reindorf (1927), referring to the development of speech in connection with the social milieu, are some works of a monographic character focusing on child language. Besides the above, the problem is discussed in treatises or monographs dealing with the psychical development of the child, by G. Ferretti (1919)[31], K. Koffka (1921), W. Rasmussen (1924), and especially Elsa Köhler (1926), who brings interesting remarks in connection with one child only, Annchen, studied from the age of 2 to 3. Bilingualism with children was also discussed, in a study on 'Dutch in India' (G. Nieuwenhuis 1929).

In connection with the relation thought-language$_1$ and in general with the problem of the logico-grammatical parallelism, which was still much 'in fashion' at that time, we may mention the works of F. Queyrat (1920), H. Bogen (1921), D. Usnadze (1930); the last one, dealing with the formation of notions, was concerned also with the learning of artificial names for new notions experimentally created.

Contributions forgotten nowadays (but which remind us of a series of later works and especially of titles of some articles by R. Jakobson and of the theses successfully developed by the outstanding linguist) are Sabina Spielrein's articles (1922, 1923), on 'Analogies between the thought of children, of aphasics, and subconscious thought' (in which she analyzes, for instance, certain associations in the child with the help of the 'groups of ideas', centered round some words as Fr. *manger*, *dormir* etc.), and about 'The appearance of the nursery words *Papa* and *Mama*' (with psychoanalytic interpretations). If we speak about 'nursery words' and about the way of addressing children and especially about baby talk let us not forget that L. Spitzer (1927) published at that time his 'Puxi, a short study about the language of a mother'. In the same epoch, the Romanian neurologist D. Noica (1922, 1923) discussed, in parallel, child language and that of the aphasic, from the point of view of onomatopoeia and gestures; and in another work, he extended the comparison to the development of language$_1$ with the normal child, the aphasic, the deaf, the mentally handicapped children and the blind ones. The Soviet physiologist A. Ivanov-Smolenskij (1922) published a study on 'The biogenesis of verbal reflexes' (cf. Luria 1959a:572). Practical aspects concerning language$_1$ troubles were touched upon by H. Gutzmann (1922) too, in a chapter dealing in general with 'The psychology of speech'. G. de Parrel and G. Lamarque (1925) made reference to the way in which the deaf (-and-dumb) child expresses himself.

Let us mention at last F. Richter's (1927) useful work on the psychological research done in the field of child language up to the beginning of the 20th century.

[31] In his article devoted to imitation, the Italian psychologist mentioned that the child does not take over anything exactly in the form in which it is offered to him, but 'creating, adopting, rendering valuable the material he is offered' (Ferretti 1919:278).

3.2 *1931–1940*

3.2.1 One cannot say that this decade is rich in important studies about child language: research advanced slowly along the path delineated in the preceding decade. However, in the history of our problem, this decade is marked by the works of two linguists: one of them, A. Grégoire, produced a study highly remarkable for its sagacity, minuteness of method and the usefulness of the material brought together; the other one, R. Jakobson, marked a revolution on the theoretical level, inaugurating the epoch of structural analyses in this field, and showing brilliantly what research into child language means to linguistics.

A special issue of *Journal de psychologie* (*Psychologie du langage* 1933) is also to be mentioned here, because it has become a classic in the field and is one of the most evident proofs of the cooperation manifested in that epoch by psychologists, linguists, neurologists etc. and efficiently upheld by the old French journal. The volume also contained several important contributions referring to child language, by E. Cassirer, M. Cohen, H. Delacroix, A. Grégoire, J. van Ginneken.

A. Grégoire's (1937) vast work about 'The apprenticeship of language$_1$ [Fr. *langage*] — the first two years' was preceded by the article included in that special issue of *Journal de psychologie*, in 1933. On the one hand his insistence in this article ('The apprenticeship of speech [Fr. *parole*], in the first two years of childhood') on the fact that the studies about child language were not satisfactory — because they did not contain enough particular data and were deficient with respect to the first year of life — and on the other hand the discussion of some phonetic facts — to which he dedicated almost the whole article — made it likely that the author intended to remedy these deficiences. Actually the first volume of his massive *L'apprentissage du langage, Les deux premières années*, appeared four years later (with a significant change in the title, as compared with the previous article: *langage* instead of *parole*). In the foreword he repeated the criticism expressed in his former article, underlining with indignation that 'one studies minutely the intimate gestures of insects, but not also the manifestations of the infant', and that sometimes the beginning of language$_1$ is neglected under the pretext of the researcher's incompetence in phonetics: 'On s'étonne parfois d'une indifférence aussi sincèrement avouée' (Grégoire 1937:5–6). Grégoire's book achieved what he rightly showed had been missing until then: an investigation into the beginning of language$_1$ in the first year of life, a minute analysis ('a microscopic analysis', as Jakobson calls it [1939]:367) of facts carefully observed and exactly recorded, a phonetic study (the aspect which prevails in the first volume). In what it aimed at, Grégoire's book is a model of the genre and the most important work of analysis of child language$_1$ written in the decade under discussion[32] (considered by Leopold

[32] The second volume, published ten years later, will be discussed in the appropriate decade: the postponement is not artificial at all, since certain significant changes and additions appear in that volume.

1952:71, as the 'first exhaustive study by a linguist'). Its limitations result from the fact that it cannot offer the possibility of generalizing the principles and conclusions put forward by the author: the work being case-oriented, based not on the observations of a large number of children learning their native language under normal circumstances, but only on the study of a certain case — that of his two children, under the condition of bilingualism — of parallel learning of two languages (French and German), in the same family. Moreover, although the transcription of sounds is minutely done, the system of transcription is, however, insufficient for the complex sounds produced by children in the first months. Grégoire suggested (:30–31) a research that would tempt us, too, later on: one should study in different parts of the world, whether the first vowels and groups found by him (a:, ə:, ərə) are everywhere the same. But how could one make sure whether these sounds are 'the same' (and whether the sounds registered by others coincide with those registered years ago by Grégoire), on the bases of such a brief description and of a notation using for instance the sign ə, created for the speech of adults, and used even to render rather different sounds, from different languages (in Rom. *mămăligă* and in E. *defection* or *player* — in transcription: di'fekʃən, pleiə,[33] or in Bg. мъш (məš) etc.)?

Even before the appearence of the second volume of his study, Grégoire (1939) published a book that might be classified under the theme of baby talk — of 'speech inspired by children' and used by adults for children or in the relations the adults have with them: 'Edmond-Puxi-Michel. First-name and nickname of three children'. Interweaving his previous remarks — of 1911 (cf. Grégoire 1939:5; and Spitzer 1927:2), about the way in which a mother had modified the first-name of her son *Edmond*, with a discussion of Spitzer's (1927) contribution with respect to *Puxi*, and with the notations about the names given by a third mother, Grégoire has the opportunity to mention also many creations found in the speech of the respective children (mostly lexical coinages or language regularizations, such as: *Clarinine* from *Anna Karénine*, or *Je suis défatigué*, or [the pool in the garden is] *glaçonné*, etc., p. 147).

Grégoire (1947:345), entitling a chapter 'Child phonology', made a surprising statement by saying that R. Jakobson prudently had not made use, in *Kindersprache, Aphasie und allgemeine Lautgesetze*, of the term that appeared in Grégoire's title. But both the mentioned books (written between 1939 and 1941 in Oslo, and published in 1941–42 and apart in 1941, cf. Jakobson 1962:396), and the paper delivered at the Vth International Congress of Linguists, in 1939 (published later on, in 1949, as an appendix to N.S. Troubetzkoy's 'Principles of phonology') are pleas for the phonologic study of child language and for fundamenting the structural laws of language on this basis, too.

Perhaps it was just because he did not limit himself to isolated cases of children and that he based his approach on observations made by others,[34] that Jakobson could

[33] Daniel Jones, *English pronouncing dictionary*, Everyman's Reference Library [Moskva, Izd. Sovetskaja enciklopedija, 1965].

[34] Among whom, first of all, A. Grégoire, but also 'the thorough Serbian scientist, M. Pavlovitch' — cf. Jakobson [1939]:368).

grasp the general principles of the evolution of child language, especially in its first years. He thus was able to distinguish an organized succession in the acquisition of phonemes and 'to bring together the evolutive order of child language with the general laws revealed by the synchrony of the languages of the world' (Jakobson [1939]:371–2). The inclusion of this study in the appendix to Troubetzkoy's book underlined the very idea that 'the evolutive order [...] corresponds also to a general synchronic law formulated by Troubetzkoy' (*ibid.*:371).

Watching the way in which 'the phonetic richness of babbling gives way to a phonologic restriction', Jakobson was in search of the law that regulates the successive acquisition of phonemes, and which is not that of least effort': the sorting out is done according to the phonematic value acquired by the sound, depending on the necessities of communication and consequently on an adjustment to the environment. This necessity requires simple phonic oppositions: a wide vowel and a labial occlusive consonant (*p/a*, whence *papa*), the opposition of a nasal and an oral (*papa/mama*), of labials and dentals (*papa/tata*) etc. In *Kindersprache*..., Jakobson [1941] showed even more analytically 'the rigorous stratification of same phonological oppositions and the way in which this order appears' (cf. Jakobson [1939]:378).

In order to verify these ideas as laws of child language, and as language universals, Jakobson demanded 'minute linguistic researches into different ethnic groups' (*ibid.*: 372). Anyhow, research was indeed needed to assess the statement that 'the chronology is the same with all children' (*ibid.*:369).

Jakobson tried to find a principle of isomorphism in these laws, between child language and all natural languages, as well as aphasia: 'there is an identity of structural laws regulating any change in language$_1$' which underlies 'both the growth of the phonological system and its dissolution' in aphasia (Jakobson [1939]:373; [1941]: 396). These analogies were much discussed, and they still are to be examined and verified through complex comparative investigations. However, having applied the general principle of structural analysis also to child language, as well as having underlined (with the competence of a first-rate representative of phonology) the importance the study of child language has for linguistics, as well as having provided the impulse towards new researches, remains the immense and undeniable contribution of R. Jakobson in this domain.

Books like that of H. Delacroix and those of O. Decroly, written in the same period, cannot be considered as minor, but compared with those analyzed above, they certainly contain neither the richness of material and analytic discussion to be found in A. Grégoire's monograph, nor the theoretic scope of R. Jakobson's works.

In 'The development of speech in the child'[35], the Belgian pedagogue and psychologist O. Decroly had a practical aim, namely that of supplying tests for the evaluation of speech comprehension and verbal expression of the child, during its development (up to the age of 14); the same was the aim of 'An exploration of child language$_1$,

[35] Decroly's books bear no mention of their publication year. They were written and published around 1930 however (two of them published posthumously).

Tests of comprehension, imitation and expression' (published posthumously). The book 'How the child gets to speak' (published posthumously, too, in 1933)[36] contains valuable material, gathered by Decroly for the former book, which he wanted to keep apart from the rest (because he considered it 'a theoretic' or 'psychologic side of the problem' (Decroly [1933?]:11). Based on many examples registered by himself or by other authors (the bibliography is rich), this synthesis — studying the evolution of speech, beginning with cries and babbling — brings a useful and often interesting discussion of certain problems, as for instance that of imitation, of the child's comprehension of speech, or its vocabulary (the ratio of different categories of words, the types of word distortion etc.), of factors that influence the development of language$_1$.

The book 'The child and the language$_1$', of the psychologist H. Delacroix (1934), is a small jewel of style and interesting remarks about the way in which child language$_1$ mirrors the psyche and about the child's endeavour to acquire language in the continuous process of social influence. Perhaps Delacroix kept 'observation cards', but the book does not provide us with any concrete example and details are scarce — the discussions having a general character. However, the work is rich in judicious ideas — expressed in a clear style, refined in its simplicity — in a well-grounded criticism, in opinions that still withstand a confrontation with reality. Even by the style in which the topics are presented, Delacroix's book could indeed constitute an incentive to study child language. As compared to this book, Delacroix's (1933) contribution to *Psychologie du langage* (1933); 'On the threshold of language$_1$', is a less interesting study, which centers the discussion on a genetic level, underlining the difference between animal communication and child language$_1$.

Using another method and referring to English, M. Lewis (1936) approached, too, various aspects of child language$_1$. In *Infant speech*, attention is paid to the first stages of speech development and to the process of progressive changes of patterns in children's linguistic behavior. Lewis's position is that of a psychologist, the author being interested mainly in the acquisition of language as related to the inner drives of the child and of his psychic mechanisms. In an article (Lewis 1937), he also studied "The beginning of reference to past and future in a child's speech".

Showing further interest in child language, M. Cohen (1933) discussed, in his contribution to *Psychologie du langage* (1933), the 'last persistencies in child language$_1$' (of the 'false segmentation' type [Fr. *fausses coupures*] — as for instance *Est-il canjelu, ce petit!*, or the wrong senses as *présentement* = 'actuellement'); he underlined the importance of these aspects for linguistics, as they can furnish data in the problem of changes introduced in an idiom by each generation.

Although by adoption and by the place where he worked and published his books about child language, W. F. Leopold (1939–49) pertains to the American bibliography, we cannot help mentioning at least his name. He was just beginning to publish, in the

[36] In her autograph to H. Piéron, dated 1934, on the copy to be found at the 'H. Piéron' Library of the Institute of Psychology in Paris, Mrs. Decroly asserted this book was '[un] travail auquel mon mari a consacré encore la dernière soirée de sa vie, et cela avec tant de joie et d'animation'.

U.S., his valuable books about the development of the bilingual child (German-English).

3.2.2 Several well-known psychologists, philosophers, linguists, physicians now also concern themselves with child language$_1$.

L. S. Vygotskij's works would become widespread only later, but he carried out his activity mostly in this decade — towards the middle of which he died —. His book 'Thought and language' was published in 1934, and between 1929 and 1934 there appeared the studies included in 'Problems of the psychic development of the child' (cf. Vygotskij 1956:37, 387).

His central interest, like Piaget's, does not lie in language$_1$, but in illustrating its role in thought and in the child's activity in general. Among the different aspects to be considered, he became attracted by inner speech. Starting from the discussion of Piaget's thesis about the egocentrism of child language$_1$ (Vygotskij and Luria [1930]), the Soviet psychologist thoroughly studied, by means of experiments and interpretative analysis, the progressive change from the speech for others to the speech for oneself, which internalizes into inner speech and acquires a planning and generally an organizational role of the child's behavior. Besides this original theory, that would later yield results in Soviet psychology, we find in Vygotskij's works also valuable remarks about some particular aspects of detail (as for instance the development of meaning), as well as analyses of the linguistic peculiarities of language and the relation of ingenious (but sometimes artificial) experiments he performed. Another idea that was skillfully tackled in Vygotskij's works is that of the paradoxical relations between thought and language$_1$, which develop apart up to a certain point (there is a 'preintellectual phase in the development of language$_1$' and a 'prelinguistic stage in the development of thought'), and then merge, when thought becomes verbal and speech rational (Vygotskij [1962]:44).

Concerning the problem of the relationship between language$_1$ and cognitive activity or in general about that between the acquisition of language and the capacity to understand the way in which it functions, we must mention E. Cassirer's (1933) article about 'Language$_1$ and the construction of the world of objects' (language$_1$ as a mediator in the formation of the objectual system, and the revolution that occurs with children when they become conscious of verbal symbolism). The same topics are dealt with in O. Niemeyer's (1935) study 'About the genesis of the awareness of sentence and grammatical categories' (a study pertaining to the German school of psychology, in which one may trace the influence of N. Ach and K. Bühler alongside with reflexes of the German psychologic structuralism).

The book on 'Language$_1$ learning and its retardation' of Alice Feyeux (1932) has a rather practical importance for that period, and is especially a work of compilation, based on scarce personal research, and using an insufficiently rigorous method. In exchange, the article on 'The first manifestations of child language$_1$ and the pretended law of Fritz Schultze', by A. Ombredane (1935) — particularly known as a specialist

in aphasia —, has a general importance for the present-day study of child language$_1$. Extracted from a course delivered at the Institute of Phonetics, in Paris, on 'The development of language$_1$ and its disturbances', the article analyzes the period of the first vocal emissions of the infant, showing that the law of 'the minimum physiological effort', in this evolution, is invalidated by the motor maturation of the infant, that ranges from reactions with maximum expansion ('the law of maximum expansion') to ever more differentiated gestures. To his own observations, interesting interpretations are added — according to the physiological theories of the epoch — concerning certain linguistic phenomena or phenomena of speech development.

3.2.3 Shorter studies or those treating particular or collateral aspects of language$_1$ deal with the phonetic structure of infant speech between the age of 1 yr. 6 mos. and 3 yrs. 6 mos. (F. Röttger 1931),[37] S. Mandell and B. Sonneck (1935), or with the general modifications of the language structure ('inventory work') of children between 6 and 9 years old (G. Lange and W. Neuhaus 1934), or with child language in general (with examples from Dutch, too: Fr. Rombouts [1938?]). Others discuss the correlation between language$_1$ and the activity of the 5–6 year old child (E. Köhler 1932), or the handicap noticed in the language$_1$ development of children brought up in different institutions (H. Hetzer 1930, 1932), or the child's monologue — the appearance of this last one being explained by R. Cousinet (1936) through compensation necessities (of replacing an activity that could not be fulfilled completely). A. Kempelen (1933–34) analyses from the psychological point of view the language$_1$ development of the adolescent, in Hungarian, and Irma Kremsier (1934) deals with the improvement of oral and written language between the age of 10 and 14; the development of language in the Hungarian child of school age is also studied by Maria Preyer (1933). Verbal association experiments are performed by A. Kováts (1937, 1937–38) and J. Cser (1937), in order to establish the peculiarities of the vocabulary of Hungarian children aged from 10 to 14.

The bilingualism of little children or of school children keeps being a subject of interest: K. Hoffmann (1932) investigated the language of school children of Liebenthal, J. Sadlo (1935) watched the phonetic influences of French on the language of Polish children brought up in France, E. Kenyeres (1938) reported on the peculiarities of the acquisition of French by a 7 year old Hungarian girl, and H. Geissler (1938), in a study on bilingualism, dwelled on the linguistic development of German children living in Belgrade.

Some linguists tend to refer to child language even when dealing with linguistic themes proper: E. Hermann (1931) discussed children's acquisition of language in his book 'Phonetic law and analogy' (among other facts, he asserted that the child is highly preoccupied with the etymological relations among words: for example, a 7½ year old child asked if it was correct to say *Matrose* and *Matorboot*, or *Motrose* and *Motor-*

[37] 'Rich materials, well organized ... not satisfactory phonetically ... difficult Gestalt terminology' (Leopold 1952:78).

boot; another child, aged 4, wanted to know if: *Ist der Herzog von Coburg ein Schnellzug?*, p. 90). J. van Ginneken (1933), discussing the heredity of the 'basis of articulation' (see *supra*, note 18) also referred to child speech; and L. Spitzer (1934), telling how he embarked upon learning Turkish, made some remarks about the reduplicative words in children's speech and the nursery words in various languages.

Language$_1$ disturbances constitute a theme with practical implications, which for many decades had been served by H. Gutzmann (1931, 2nd ed.), whose book dating from 1894 on 'Speech and language in the child' is now being reprinted in a new edition. E. Fröschels (1931, 3rd ed.) — the well known specialist in language$_1$ deficiencies[38] — also published in a new edition his 1912 book 'Treatise on logopedics', in which one chapter was entitled 'The development of child language' (pp. 74–96); here, however, he discussed cerebral localizations, deaf-muteness, dislalias and voice hygiene. Some other useful works also appear in this domain: that of D. Seth and D. Guthrie (1935) — who, besides discussing children's speech defects, presented also an introduction to phonetics; or R.E. Levina's (1940) work, that refers to mistakes noted in the reading and writing of Russian children. The Soviet physiologist N.I. Krasnogorskij (1939), expounding the theory of the physiologic cerebral activity in the child, referred also to investigations on child language$_1$. The Romanian neurologist D. Noica (1931) continued comparing the language$_1$ of the child and that of the aphasic; while the Greek psychologist Rosa Imbrioti (1939) made considerations on language$_1$, in her book about the abnormal child. Phyllis Kerridge (1937) compared the language of the child who has hearing troubles, with the language of the child with normal hearing, in several London schools.

In monographic studies of certain importance, dedicated to other domains, some problems concerning child language$_1$ are also touched upon. The Romanian psychologist C. Georgiade (1934), in a vast monograph on the psychology of child thinking, discussed the ideas of W. Stern, H. Delacroix, P. Guillaume, O. Bloch, in order to support the assertion that child's language$_1$ has a peculiar technique — being ruled especially by an affective logic which must not be related to the grammar of the adult (Georgiade 1934:216). In a synthetic study having the character of a treatise on child psychology (with a view to the development of the child's world view — based on personal observations and on data from Ch. Bühler, K. Bühler, H. Hetzer), W. Hansen (1938) devoted certain chapters also to the development of language$_1$ in the infant; A. Busemann [1931] dealt also with young people's literary production and at the same time compiled some statistics regarding the lexical inventory.

3.3 *1941–1950*

3.3.1 Obviously, the years of the Second World War were not favorable to the investigation and publication of studies in the field we are interested in. Compared to

[38] Francescato (1965:357) maintains that R. Jakobson had been influenced by Fröschels.

the decade to follow, the European works on child language were far less numerous in this period. Yet, towards its end three books of special importance, that would become classics in this field, were published: Grégoire's, Ohnesorg's and Gvozdev's monographs. For its bibliographical importance and information about the respective period, we must mention here, too, W.F. Leopold's (1948) survey of the more relevant studies published in this domain and especially on bilingualism (during this decade the last three volumes of his fundamental monograph were published: see *supra*, 3.2.1).

The second volume of A. Grégoire's (1947) book about 'The apprenticeship of language$_1$' refers to 'the third and the following years'. But the difference between this volume and the first one (which it resembles in the minuteness of method and the stress put on careful phonetic analysis) does not lie solely in this, but also in the larger proportion of material referring to the vocabulary of the child (an extension which was due, of course, also to the age he was now studying), in a keener analysis of language$_1$ facts in connection with the child's thinking, or with other aspects of the child's psyche, in using ('without hesitations', cf. Grégoire 1949–50:357) the phonological terminology, in the data he adds in response to comments the publication of his first study had provoked.[39] Grégoire was wholly won over by the idea that the study of the development of child language is not only interesting for linguistics but that, moreover, 'child language may be incorporated into comparative linguistics' (p. 5). Aiming at concretizing his point of view, he wrote also a study with a programmatic title (again published in a linguistic journal, *Lingua* — as a previous article, Grégoire 1948, and bearing the same title as his book): 'The scientific revival of child linguistics' (Grégoire 1949–50). The title was motivated first of all by the appearance of Grégoire's, Jakobson's and Leopold's books (the first and the last without a knowledge of one another — cf. Grégoire *ibid.*:357), the object proper of the discussion having been that of drawing a parallel between them and of setting these authors against the historical background of their time.

At that time there was published in Moscow a fundamental monograph by the linguist A.N. Gvozdev (1949:15), about the language evolution of the Russian-speaking child. He kept a 'diary' of his child (from 1921 to 1929) and wrote this book between 1929 and 1940. The extremely rich material (collected almost exclusively by observing his own child), the careful notation (but not in a phonetic transcription), the highly analytic distribution of the material (on two months, up to the age of 3; on three months, up to the age of 5; on six for the rest) make these two volumes a longitudinal 'inventory' work, almost unique in the minuteness with which, step by step, data that gradually make up child language are put together. Luria (1959a:539) describes this work as 'wonderful' (*prekrasnaja*). If for Ohnesorg's and Grégoire's works the characteristic feature is the phonetic analysis, Gvozdev's repertoire monograph is

[39] Grégoire (1947:3, and 1949–50:355) holds that Jakobson found inspiration for his book about child language in 'several remarks of ours', in order to discover the 'striking parallelism' between child language and that of the aphasic.

focused on studying 'the formation of grammatical structure'. As it comes out from Gvozdev's (1949:5) preface to the book, he was at the time elaborating also an article about child vocabulary, in which he was also concerned with phonetic analysis[40].

Grégoire was closing in this decade the series of his important works that had marked the 30s and the 40s, while Gvozdev was publishing a book he had in fact written long before (he no longer concerned himself with child language after the appearance of his monograph). Meanwhile, K. Ohnesorg was just beginning to work in this domain in which he would then become one of the most assiduous and enthusiastic advocates of the idea of integrating the study of child language with the preoccupations of linguistics. In those years, marked by Jakobson's works and by Grégoire's first book, the Czech phonetician was carefully watching his children's vocal behavior. Besides a book addressing a larger public, about 'The development of child speech' (1948a), Ohnesorg published, in the same year (1948b), a monograph which, together with the one that would appear in 1959, constitutes the most important Czech study of child language and, at the same time, one of the most valuable in the whole bibliography. Noting minutely the evolution of his son's speech (particularly of articulation and generally of melody, from his birth, that is 1942, up to the age of 5) and paying attention to phonetic transcription, the Czech phonetician did not overlook the interpretation of the phenomena he was considering (and especially the problem of imitation, of 'laws' in development etc.), finally drawing general conclusions.

3.3.2 Besides the monographs that we have already discussed, the picture of the decade under discussion is also characterized by some others published in different languages by linguists, psychologists, philosophers etc.

In his treatise about 'The psychology of language', Fr. Kainz (1943) dedicated to child language$_1$ an important chapter, in which he presented in great detail the data known until then regarding this question. A monograph on *Language in school* (M. Lewis 1942), another on *The language and mental development of children* (A. Watts 1944) — which shows the role of language in the child's mental development, with examples from English — and another one about *The psychology of early childhood* (C. Valentine [1943]) stand for the more important English contributions in this period. Valentine's chapter about child language, up to the age of two, particularly (*The beginnings and development of language*), is conspicuous both for the material gathered by himself (but insufficiently rigorous in the notation and the linguistic analysis), as well as by his interesting remarks about early imitation, about the apparent generalization of words, about the use of prepositions (with experiments in this direction) etc. We mention here, for the English language, too, J. Seegers and R. Seashore's (1949) article about the evolution of child vocabulary (positively evaluated by Leopold 1952:85). Published in the same period, the book *The infancy of speech*

[40] The phonetic aspects had been discussed in a contribution to Rybnikov's collective volume (1927), cf. Gvozdev (1949:5).

and the speech of infancy by L. Stein [1949] — therapeutic physician in Vienna — is characterized by the same bibliographer (*ibid.*:90) as: 'Not much on child language, at second hand.'

On the basis of diaries kept on the development of his three children, the director of a pediatric clinic of Padova, G. Frontali (1943), published in *Vox Romanica* an article, interesting because it referred to Italian — a language for which less research had been done — but using an insufficiently rigorous scientific method. N. Švačkin (1948), a name we shall meet again further on, studied the development (from the age of 11 months to 1 year and 11 months) of the perception of phonemic differences, using with this aim the experimental method (cf. Slobin 1966b:381–2). With infant speech (from 14 months to 2 years and a half) dealt also T. Konnikova [1948] — interested mainly in the first words — and E. Kaverina (1950); but both of them mostly from the psychological point of view, without a rigorous notation and without showing the preoccupation for the linguistic analysis which characterized Gvozdev. The linguist P. Smoczynski (1950), using material from the Polish language, published a first article (somewhat later followed by a short monograph) about the child's acquisition of the first elements of that linguistic system.

'The child and the written language' is a work interesting in its topic (but the method of presenting the material is not sufficiently consistent) by R. Thabault (1944), based to a great extent also on observation made in 'École maternelle'.

With the last work mentioned, we come close to a theme that would be more and more favored, involving today applied linguistics and educational psychology, namely that of studying the development of language under the influence of education, especially in schools, or of studying the role of language$_1$ in child development. Such works illustrate mostly the activity carried out by Soviet researchers at that time (as well as later on). N. Leušina (1941) published a monograph on the development of coherent speech of preschool children (cf. Luria 1959a:573), whereas G. Rozengart-Pupko (1948) is a specialist in child psychology who published now a study on 'Language$_1$ and the development of perception in the little child'. In a collective volume, dedicated to 'language comprehension', N. Morozova (see Smirnov [ed.] 1947) analyzed the child's (especially the deaf child's) capacity to understand a written text, and V. Syrkina (*ibid.*) dealt with the child's expressive possibilities and at the same time his possibility of understanding language expressivity. N. Morozova (1948) published, at the same time also, a monograph on the evolution of a preschool child's attitude towards a verbal task. Speaking about works of Morozova on the capacity of communication of the deaf(-and-dumb) child, we must not forget to mention the development of Soviet logopedics, illustrated in this decade among others by M. Xvatcev's studies on child speech disorders, as the disorders of speech rhythm and their treatment, etc. (see also Xvatcev 1961).

3.3.3 Two linguistic analyses also deserve mention: one by the Czech phonetician B. Hala (1948), about the description of child pronunciation (cf. Straka 1955:276),

and one by Marguerite Durand (1949), who was pointing out the way in which children eliminate homonyms (this was not the only contribution on child language by the French linguist: see also *infra* 3.4.2).

Data in the domain of children's bilingualism were published for Finnish-Swedish by B. Malmberg (1945) — concerning the speech of a Finnish 4 year-old little girl —; for Gaelic-English by C. Smith (1948, cf. Leopold 1959:212); or about the mechanism of learning a language that replaces the native tongue in the case of a 6 year-old Spanish girl — for Spanish, French and Dutch — by D. Tits (1948, cf. Leopold 1959:205), or about the attitude towards Welsh as a second language, by W. Jones (1949, cf. *ibid.*).

As we have already specified, the works of the well known French specialist in child psychology, H. Wallon, are dedicated to the stages of general development and particularly to the analysis of child thinking; however, the material they contain as well as the different ideas put forward in his involved works are of interest to those who are dealing with child language$_1$. That is why we list here 'The psychologic development of the child' and especially 'The origins of thinking in the child' (Wallon 1941, 1945). Also on 'child mentality', M. Violet-Conil and N. Canivet (1946) present a general synthesis about child language$_1$, based not so much on personal research but mostly on the results and theses to be found in Piaget's work, on A. Descœudres' tests, etc.

'The origin and pre-history of language', by the psychologist G. Révész (1950), contains also a general theoretic discussion regarding the ontogeny of language$_1$ (specifying a distinction between child's babbling and the primitive stages of the development of mankind). T. Simon (1948–50) — cf. Leopold 1959:203 — also dealt with the theory of child language$_1$.

3.4 *1951–1960*

The literature is very rich in this decade; interest in child language study has been awakened in many linguists, who also publish important works in the field. It is, as a matter of fact, the epoch in which, reviewing M. Cohen's 1952 article, J. Vendryes (1953:27) underlined the importance of child language study for linguistics (see *supra*, 1.2). Published in 1952, W. F. Leopold's extremely useful *Bibliography* could not cover this period of child language studies; so that he decided to make some additions — valuable through his appraisal of different studies —, in an article published in 1959 in *Phonetica* (a journal which, the same as *Language and Speech, Linguistics, Revue Roumaine de linguistique*, etc., alongside with the various European periodicals of psychology, always allots — and not only in this decade — some space to studies in child language).

3.4.1 We shall begin by presenting (in the order of the appearance of their first study) some authors who made themselves conspicuous both by centering their

attention on child language and by the constancy of their preoccupation, publishing a great number of studies or, at any rate, important monographs.

The interest that M. Cohen (1951a, 1951b, 1952) had shown in child language materializes now also in studies in which he underlines the importance of this field for general linguistics, insisting at the same time that the generalization should rely on facts and consequently calling for detailed researches. The standpoint adopted now by the well-known French linguist was that which would gain ground in studies of this kind: neither a strictly linguistic nor a purely psychological one. M. Cohen's concern for methodology in this field will make him publish a nearly programmatic article in the journal *Enfance*,[41] in which he gives indications for further research in this domain,[42] specifying — among other things — the necessity of setting up 'chairs for child language'. The very ample article (occupying almost a whole number of the journal) offered not only methodological indications, but also numerous personal observations of facts and examples picked up from the language of six subjects (the author's children and grandchildren) and put down in a careful phonetic notation. We mention moreover, the importance he attached to the notation of gestures in child language$_1$ (an idea emphasized also in his review of W. F. Leopold's monograph, in which M. Cohen showed that he was not in agreement with the American linguist, because 'on ne peut pas décrire l'expression enfantine sans tenir compte des cas où les gestes équivalent à des mots' (Cohen 1951a:62).

Another member of the French school, working in the field of psychology, particularly with the then current psychology of the handicapped, P. Oléron (1952a, 1952b, 1957), dedicates the first part of his activity to studying the language$_1$ of the deaf-and-dumb child. Besides having in view a psychological interest in the role language$_1$ plays in the development and functioning of thinking and in intellectual activity in general, the French psychologist — nowadays head of the Laboratory of Genetic Psychology at the Sorbonne — made also precious observations on deaf children's means of expression. His conclusion was that language$_1$ plays a part in a child's activity,[43] but certain limits have to be specified: language$_1$ is necessary especially as it facilitates grasping relations and because it offers the 'rule of behavior', socialized, and thus included in the word; language$_1$ being absolutely necessary on the operational level, whenever problem-solving is not possible on a perceptive basis only (Oléron 1957).

A linguist who followed a rather opposite path — eventually approaching a practical activity in the domain of the handicapped, more exactly in logopedics — is

[41] Considered also by his reviewer, J. Vendryes (1953:25), as M. Cohen's most important study about child language.

[42] The fact that he addressed firstly 'nursery personnel' (Cohen 1952:181) shows from the beginning also his desideratum to overcome the case-oriented stage, and to observe the language of a larger number of children: 'un grand nombre d'enfants devront être observés, en tous pays, de manière à reconnaître les règles d'acquisition' (*ibid.*:222).

[43] In a previous study, devoted to 'the intelligence level of the deaf-and-dumb', Oléron (1950:46) drew the conclusion that child development owes much to language$_1$; subsequent research brought forward additional data in the study of this relationship.

L. Kaczmarek (1953), author of the first important Polish linguistic study on child language (now the holder of the Chair of the Polish Language at the University of Lublin and promoter of the logopedic trend in Poland). He observed the speech of his own child from birth, minutely noting facts from the 'melody stage' (characteristic of the first year of life), from the 'stage of word formation' (1, to 1 ½ or 2 years of age), from the 'sentence stage' (1½ to 2 or 3 years of age) and from the 'stage of language specific to the child' (2 or 3, to 7 years of age). In contradistinction to K. Ohnesorg's study — which we have already discussed and to which we shall return later, Kaczmarek's monograph is not so much dedicated to phonetic aspects, the author having the intention of allotting his interest to all aspects that are revealed by the four 'stages' and to reaching theoretic generalizations.

We shall mention here — among the most remarkable names — that of the well known Soviet psychologist and neurologist A.R. Luria (1955, 1956–58, 1958a, 1959b, Luria and Judovič 1956), though his works do not contain properly linguistic material. The interest in language$_1$ has been a dominant feature in all his activity, and within this framework he followed with persevering competence the problem of the role played by language$_1$ in the development of the child. Language$_1$ has a regulating role or a directive function (1959b) on activity, and this role is rendered evident both under normal circumstances and also in the case of the abnormal (deficient) child. Addressing linguists in an article published in the journal *Word*, he proposed studying the pragmatic aspect of language$_1$ as a new chapter in psychology and in psycholinguistics (*ibid.*: 351). A very interesting experiment done by Luria together with Judovič (Luria and Judovič 1956) consisted in watching the language and the general development of twins, who had been separated at a given moment: concomitantly with the development of speech, under these conditions, their activity was restructured as well. Luria's efforts are of value not only due to his own works, but also owing to the dynamism with which he founded a team of researchers, who focused their interest on problems concerning the part played by language$_1$ in the life of the child and who conducted experiments in the period we are dealing with (N. Paramonova, E. Xomskaja, etc., cf. also Luria 1956–58).

Although the first editions of L.S. Vygotskij's works (1956, 1960) belong to the decade of 1930, he must be mentioned here not only because his books were now published in new editions, but also because — we may say — he was rediscovered (however, he would be really 'known' to the foreign readers only in the next decade, when an English translation would become available).

Leopold (1959: 196 ff.), in the article "Kindersprache" which was, as has been pointed out, an addition to his previous *Bibliography of child language*, stated that 'between 1948 and 1957, no less than five thorough works offering source material [ernsthafte Quellenwerke] appeared in Eastern Europe', namely the monographs of Gvozdev, Ohnesorg, Kaczmarek, Smoczynski and Slama-Cazacu, with material from several Slavic languages and from Romanian.

Of the above mentioned works, we have already discussed Gvozdev's monograph,

that of Kaczmarek, and Ohnesorg's first work. The activity of the latter increases in this decade, when he publishes 'A second phonetic study on child language' (1959a) and various articles, either in completion of the 'phonetic study' (about child vocabulary, 1955a), or in the general presentation of studies on child language (1955b) or still in information about the activity carried out in Czechoslovakia for child speech-training — and especially about logopedics (1960),[44] he himself becoming, as Kaczmarek, a first-rank representative of this applied field. The 'second phonetic study', like the first, is characterized by the solid method with which the Czech phonetician observed, noted and discussed the data regarding the development of his daughter's speech (to which he added data about other Czech children, in order to establish some general principles). Like the first volume, this second contains a list of 1613 words, with an indication of the development of their phonetic production. Ohnesorg insists on the idea that child language, too, has general laws of evolution (1955a; 1955b:95ff., 101; 1959a:150ff., 157), underlining some major themes noticed in the development of speech (as for instance the important part melody and rhythm play in the first stages of communication, or the abbreviated forms of rhythmic groups of a certain length — children usually retaining the final syllables —, or reduplications, or the tardy distinction between voiceless and voiced sounds — the articulatory difficulty in distinguishing *t-k* and *l-r* is present with all children anywhere —, or the 'arreption' phenomenon — the term he used for the adoption of unusual expressions, especially for their acoustic nature, etc.).

The first monographs on the language of the Romanian child began appearing in this period. Having a twofold training — of a linguist and of a psychologist — and intentionally wanting to go beyond both the strictly linguistic method and the purely psychological approach in studying child language, T. Slama-Cazacu wrote works in which the psycholinguistic position is evident, even if the term as such (launched by an American book[45] then unknown to the author) is not used in them. From this point of view, these works constitute perhaps the first European contributions to psycholinguistics in the modern sense of the word. In various books and articles published in this decade, the Romanian author deliberately presented rich factual material (gathered through observations and experiments on several hundred kindergarten children from Bucharest — where school began at the age of 7). Her aim was neither to draw up certain 'inventories' of facts, nor to give a strictly psychological analysis of some language$_1$ aspect or of its role, but to pursue the changes that occur in children's expression and understanding of messages, owing to the different situations in which they find themselves during their growth (owing to age periods, to stages of thought development, to influence of affectivity, to social relations with the adult or with other children, etc.). Concentrating on the relations between language$_1$ and thought — with the aim already mentioned — the author (1965a, 1956b, 1957a,[46] 1957b, 1960a) analyzed aspects of vocabulary (such as the verbal

[44] In 1946 the Institute of Logopedics was founded (cf. Ohnesorg 1960:57).

[45] Ch. Osgood and T.A. Sebeok (eds.) (1954).

associations which allow us to grasp the real sense children give to words, or the 'contaminations', or the development of meaning, which change according to age and child thinking), or of grammatical structure (as, for instance, the appearance, about the age of 2, of 'syntagmatic blocks' — formally correct expressions, adopted without analysis, as a block, and sometimes having a meaning different from that they have in the speech of the adult —, or what might be called according to the author 'the style of child speech'). Children do not acquire language passively, by completely mechanical imitation; they take an active part, more or less deliberately, under the spur of affect, of motivation, or of age peculiarities, acting as a 'selective echo' (1957:430). Another leading line of these researches was constituted by the peculiarities of communication (of dialogue) in children (1959 — an article which offered part of the results of a research project that would be presented in a later study): the function of communication appears early and its development is also conditioned by the educative environment which imprints certain specific aspects on language$_1$, in differing situations or in the dynamics of the relationship established between emitter and receiver.

W. Kaper [1959] published a thorough monograph referring to Dutch, valuable both for the material offered for that language — based on observations on his two sons (beginning with the age of 2) — and for the original topic heralded by the title: 'Research on child language, with the help of the child'. Children evince interest for language facts, and linguistic awareness manifests itself quite early: this observation, made also by other researchers, is supported here by means of rich material illustrating the child's opinions about language facts.

Trying to adopt the child's point of view, using the child's remarks about the different terms and phrases he had heard, Kaper shed light on interesting phenomena, as: the child's selection of words and grammatical forms, or the self-correction — which shows clearly that the acquisition of the mother tongue by the child is not a passive process but implies his continuous intervention (compare this with the idea of 'the selective echo', Slama-Cazacu 1957).

The North of Europe was somewhat late in contributing to the fundamental bibliography of the field. It was in this decade that Velta Rūķe-Draviņa (1959a, 1959b) began to publish interesting studies on a Baltic language (Lettish). Her book about the diminutive in Lettish contains also material on baby talk (*Ammensprache*), showing the influence exerted by children on the language of the adult. Treating more directly child language, another work presents Lettish material illustrating the appearance of inflection (between 6 mos. and 3 yrs. 1 mo.). Relying on rich material, the author draws the conclusion that the syntactic development is prior to the appearance of morphological marks of syntactic relations (with the Lettish children observed by her, the declension system is constructed towards the end of the second and the beginning of the third year of age — Rūķe-Draviņa 1959b:219).

[46] The monograph is considered 'thorough' ('gründlich') by Leopold (1959:197), Luria (1958a:171).

Although not written in Europe, we find it necessary to mention here two further studies by R. Jakobson (moreover so, since they became more widely known by being issued at a later time by European publishers): an ampler study, in collaboration with M. Halle (Jakobson and Halle [1955]), in which the parallelism between aphasic dissolution and child speech is discussed again; the second article concerns the explanation of words like *mama, papa,* by means of characteristics of baby talk.

3.4.2 Other interesting monographs were also published by different psychologists and linguists.

A book by M. Lewis (1952) showed *How children learn to speak*, with material taken from English and containing first of all a synthesis on the basis of bibliography. On the other hand, an Italian linguist, P. Fronzaroli (1957), relying especially on bibliographical data and aiming at writing a book for 'non-specialists', published one of the few Italian monographs on 'Child language$_1$'. He underlined the usefulness of a stylistic study of child language (demonstrated in studies which appeared in the same year by Slama-Cazacu 1957a, 1957b).

The Pole P. Smoczynski (1955) complemented the data formerly provided by L. Kaczmarek, analyzing 'The Child's acquisition of the rudiments of the linguistic system'; he offered rather rich material from the Polish language on the basis of watching his two children. As a matter of fact, in this period, a larger number of studies on child language were published by Polish research workers. Besides the linguistic line of research, there were also the studies encouraged by S. Szuman, professor at the University of Krakow, the author of numerous studies on child psychology (see, among them, his study on comparison and abstraction with children — Szuman 1951 —, or Szuman 1955). L. Geppertowa (1957) investigated the understanding and expression of relations defined by using prepositions, with children aged 2 to 3, and thus illustrating the relation between language and thought. On the basis of diaries kept by mothers (former students in psychology at Krakow University), M. Przetacznikowa (1959), too, analyzed the relation between language and thought with preschool children, watching the way in which objects, phenomena and actions are reflected in the meaning of the words used by children.

In Switzerland, J. Wittwer dealt with 'The grammatical functions in the child'. The author of this monograph (based on a method not sufficiently stringent) named as his mentors the psychologists J. Piaget, R. Zazzo and R. Cousinet, and the linguist R.-L. Wagner, and defined his book as aiming at a discussion of 'the reform of teaching grammar' (Wittwer [1959]:288). In a previous article he had presented 'logical and psychological aspects' in the agreement of the past participle with the Fr. verb *avoir* (Wittwer 1958). In a book on 'Grammar and affectivity' F. Rostand (1951), giving psychoanalytic interpretations (that were considered exaggerated by M. Cohen 1951b: 65), presents remarks on a little girl's speech.

In the journal *Phonetica*, the German A. Wellek (1959) attempted a discussion of principles for the establishment of a 'theory of the expressive value of phonemes',

on the basis of the psychology of language$_1$ development. A Dutch thesis, well informed in modern linguistics, 'The acquisition of speech and its analysis', by B. Siertsema [1960], is also more of a theoretical approach than an exposition and interpretation of material directly collected.

When considering the proper linguistic standpoint, or the works addressing linguists, mention must be made of the contributions published in this period too by the French linguist Marguérite Durand. Her study "Le langage enfantin" (1954) is a remarkable synthesis, containing many a subtle remark and example registered by her — among them, such coinages as *lilayer*, *lilatier* 'tree on which the lilac grows' (p. 92). 'Recollections of a child's understanding of language' (1960) contains explanations, given by the future linguist when she was a child, to phrases misunderstood or misheard.[47] The chapter written by O. Irwin (1957) for the *Manual of phonetics* edited by L. Kaiser is useful in its insistence on the necessity of making a systematical phonetic study of child language; of importance are also the remarks on method and the report on research carried out by him or by some collaborators from the U.S. (attempting to show that 'laws' exist in the development of child language$_1$), which he thus makes available to European linguists. On the other hand, a European, the Dutchman F. Grewel (1959), in the article "How do children acquire the use of language", imparted to the readers of the journal *Word* his ideas about the difference and sometimes discrepancy — illustrated by the development of language$_1$ — between possessing 'motor articulatory skills' and possessing the linguistic system (between 'being able to articulate' and 'knowing how to articulate'). Observing the vocal emissions of 17 children from the age of 1 month to a year and a half in different life situations, H. Tischler (1956) studied the first stages in the development of child language$_1$ (but, unfortunately, without indicating a system of phonetic transcription).

Dealing especially with the general development of the child or with certain aspects of his psychic life (as thinking, imitation, social attitudes, etc.), some psychological studies contained also data about language$_1$. Ph. Malrieu (1951) showed the role of language$_1$ in cognitive activity, within the social attitudes of the child up to the age of 2, and S. Szuman (1951) — see also *supra* p. 544 —, presenting experiments on comparison and abstraction with children, also demonstrated the way in which language$_1$ intervenes in these operations. The well known specialist in child psychology, R. Zazzo, dealt in his lectures also with the evolution of language$_1$ (1958), and in an article devoted to imitation in the new-born (1957) presented original observations about an interesting phenomenon of tongue protrusion, that might be interpreted as a very early imitation and which could be of interest for the study of language$_1$ development. In his fundamental monograph about 'The twins', Zazzo (1960) also referred to speech delay in the case of twins, to cryptophasia, etc. (using mostly data from previous literature).

[47] For instance *bouc émissaire*, interpreted as *bouquet misère* (Durand 1960:255). Compare it also with M. Cohen's (1933) article about persistencies in child language, some of them, too, based on misunderstanding some expressions.

The field of applied research developed in different countries (referring to language$_1$ retardation and speech disorders, logopedics, 'defectology' or study and reeducation of the handicapped — as deaf children — etc.). We have already mentioned works of this nature in Czechoslovakia, France, Poland; we shall resume our discussion with respect to the Soviet Union. However, we must add that the great progress of Czech logopedics owed much to M. Seeman and M. Sovák. In this period, M. Seeman's book about child speech disorders (see Seeman 1967) was published (the 1955 Czech edition); soon afterwards, it was translated into several languages. A special mention should be made of the advances in this field in Holland, where owing especially to the works of B. Tervoort, the peculiarities of the communication between deaf(-and-dumb) children were becoming better known and were being linguistically analyzed. A good-sized thesis (Tervoort 1952), published in Dutch, contained a 'Structural analysis of the visual language$_1$ in a group of deaf children', and offered many interesting data about 'esoteric language' (in which the visual sign may be either speech or gesture or both of them combined) and about the 'exoteric language', of the deaf child. Other studies kept investigating language$_1$ and its development in small deaf children (Tervoort 1959) or the thought-language$_1$ relation in deaf children (Tervoort 1958). In Great Britain, the specialists Irene and A. Ewing (1954, [1958]) published books devoted to language$_1$ training in deaf children, containing as well data about other aspects of the communication of deaf children. Also of practical interest for the teaching of reading and the reeducation of dyslexia, is the good monograph produced by the French specialist Suzanne Borel-Maisonny (1960), about 'Written and oral language$_1$'. For measuring the level of language development in the normal child, Odette Brunet and Irène Lézine (1951) published a French 'scale'; a study on the verbal retardation of crèche [public day nursery] children was carried out comparatively in France and Poland, by Irène Lézine and Hélène Spionek respectively (1958).

3.4.3 Several studies of a monographic character put forward additional material about child language$_1$ in different linguistic communities. W. Mohr's (1954) observations about his four children (speaking German) emphasized the relations between child language$_1$ and that of the adult from whom the child takes over the native tongue; in German too, E. Richter-Feldmann (1955) gave a list of the vocabulary of a $1\frac{1}{2}$ year-old child (cf. Leopold 1959:204). For Czech, there are some phonetic observations about children's pronunciation, made by B. Hala (cf. Straka 1955:276), remarks about the acquisition of the concept of grammatical subject, by J. Procházková (1956), and the analyses of the phonetic production in the language, each of his own child, by L. Bartoš (1959) and by J. Pačesova (1959), pupils of K. Ohnesorg. Let us mention also the fact that the psychologist V. Chmelař, professor at the University of Brno, insisted that his students should study child language$_1$ (cf. Ohnesorg 1962:238, 239). In Poland, K. Tyborowska (1957) carried out experimental research on the development of the language$_1$ of the preschool child, as determined by his activity

guided by the kindergarten teacher. In Denmark, A. Epstein (1959) performed experimental research in order to establish the moment when Danish children begin using the indefinite article (on 90 children aged between 3 and 5). Another study, of S. Sack's (1957, cf. Titone 1964a:177), dealt with the acquisition of the structure of English by English preschool children; other authors studied the sound system of the child (J. and R. Albright 1956, 1957). For Slovenian, R. Kolarič's study should be mentioned (cf. Mikeš 1967:298).[48]

Some of the textbooks on child psychology also dealt with the problem of child language$_1$: a manual of A. Gemelli (1956), for instance, or the general treatise on language by F. Kainz (1960 [1943] — see also his article of 1960), who underlined for instance the 'dialectics of docility [Rezeptivität] and spontaneity' that acts in the child's language$_1$ development — Kainz 1960:95); or G. Collin's (1957) book, which is a comprehensive survey of the data existent in literature, reporting however very few personal investigations on child language$_1$; or P. Chauchard's (1958) popularizing book (but on the high level characteristic of the 'Que sais-je?' collection), based on data from literature, too.

Some interesting data on bilingualism in children were presented by F. Stroh (1962: 325–34), for the Germanic languages and especially for Flemish and Wallonian (cf. also Leopold 1959:205); J. Voskuil (1956, cf. Leopold 1959:205, 211) dealt with Dutch-Hindustani bilingualism, and K. Boelens and J. Veen (1956, cf. *ibid.*:205) with the Frisian of Holland; bibliographical data about Portuguese-Brazilian bilingualism were furnished M. Paiva Boléo (1956, cf. *ibid.*). A note on the way in which Czech children aged 3–4 (who were released from a concentration camp in 1945) had learned English, was published by Sophie Dann (1960).

The relationship between linguistics and the study of child speech, as well as the importance of the latter for the understanding of certain aspects of language, were illustrated also in studies by W. Schoof (1953), about the role played by the entourage in the development of child speech (cf. Leopold 1959:204), and particularly in that written by P. Boyd-Bowman (1955), who attempted to prove that the hypocorisms are not arbitrary substitutions but are largely due to the rudimentary phonemic system of children who are learning the language and to the efforts of the adults to imitate this system. The question of the imperfect tense of 'fiction', which indicates an imaginary plane, aroused the interest of some linguists, who signaled its existence in child speech in different languages: in this decade, let us mention A. Graur (1955) for Romanian and A. Henry (1954) for French (as in: *Moi, j'étais le gendarme et toi, le voleur* — Henry 1954:13). Let us mention also, within another favorite area of interest for many linguists, A. Nykl's (1957) study (published in the European journal *Orbis*) about words like *mama, papa, dada,* which have not in all languages the same meaning. Some remarks about the phonetic evolution of the child were made by the

[48] Though he has not published his findings in this direction, we mention here, too, the tape recordings of his children's speech (in Hungarian), that the Hungarian phonetician I. Fonágy told us he had made.

German linguist G. Meier (1958); whereas P. Arvis (1959) discussed — in disagreement with Zazzo (1957) — imitation by the child (acts that seem to be imitation pertain, in fact, to the spontaneous activity of the child — p. 355).

In their attempt to determine the elementary vocabulary of French, primarily for the purpose of teaching it as a foreign language, a French team (G. Gougenheim 1959, Gougenheim and collab. 1956) made, among other investigations, a study regarding the most frequent words given by French school children as a response to certain stimuli, as being the most fit for such topics or 'centres d'intérêt' (as 'At the restaurant', or 'Travelling by train', etc.). Thus, from a certain point of view, an interesting material resulted for the study of child language at this age.

In the applied field, Ruth Griffith (1954; reprinted 1960) submitted a *Scale for hearing and speech.* In 'defectology', logopedics, and in the area of studies about speech disorders, as well as in that of general pathology, we come across contributions of M. Sovák (1956) — about the relations between laterality and speech disorders —, R. Schilling (1956), M. Morley (1957, cf. Leopold 1959:207) — about language$_1$ development and its disorders —, A. Busemann (1966) [German ed. 1959] — about the language$_1$ of the mentally handicapped children —, L. Kaiser (1959) on the speech of Dutch school children presenting language anomalies —, E. Froeschels (1955) — who gives also a general survey on European logopedics —, L. Croatto (1958a, 1958b; Croatto and Croatto-Martinolli 1952, etc.) on child audiometry and language deficiencies, Z. Omerza (1959) — a chapter on the development of language$_1$ of Slovenian-speaking children (cf. com. M. Mikeš). Some Romanian researches in this direction reveal interesting data, for the Romanian language, about the language peculiarities of mentally deficient children (M. Roșca and R. Dinu Cotuțiu 1958) or about the vocabulary of the deaf(-and-dumb) child and about the acquisition of verbs (V. Mare and D. Ciumăgeanu 1958; D. Ciumăgeanu 1959), or about the verbal reactions (vocabulary) of blind children (A. Chircev et al. 1958).

3.4.4 The Soviet school was very productive in this decade as far as research on child language$_1$ was concerned. Their number, as well as a certain unity of interest in method and of theoretic background, make it necessary to group them together and to dedicate to them a special sub-chapter.

The tendencies converge especially towards a practical psycho-pedagogic aim (in the domain of the normal, the defective, or the pathologic), trying to show, on the one hand, the way in which language$_1$ develops (and the means of improving it), and on the other hand, the relationship of language$_1$ with other processes and especially its role in the ensemble of the child's psychic life (particularly the relation between language$_1$ and thought). A direction of research, derived from the Pavlovian school, aimed at rendering evident certain conditioning mechanisms in language$_1$ by experimental means.

Besides discussing here those researchers who published their findings in this field, we shall also name several authors who produced syntheses of the Soviet psychol-

ogy of language$_1$ in the last 40 years (Raevskij 1958; Luria 1959a; Slobin 1966a, 1966b, 1966c, 1967), or about certain aspects of the activity of Grusian (Georgian) psychologists (Natadze 1957): works in which a large amount of space was allotted also to a minute presentation of different studies referring to child language.

An almost general methodological tendency is that of making observations or performing experiments with a quite large number of children (using for this preschool institutions). Another general tendency is that of avoiding mere inventory works or bare descriptions of language facts, but of trying instead to find out their intimate relations with other psychic phenomena, or of thus endeavouring to explain certain aspects of language$_1$ development (as a matter of fact, almost all who dealt with child language$_1$ in this decade were not linguists but psychologists, pedagogues, specialists in 'defectology', or neurologists).

Among the very few works that provide, strictly speaking, 'source' material for Russian, there is K. Čukovskij's (1955) charming book 'From [the age of] two to five'. Written by a well-known writer — who was not directing his attention, with sympathy, towards child language for the first time —, it offers a bulk of amusing fragments from the language of Russian children (among which, such coinages as: Russ. *ulicioner* — out of *milicioner* 'policeman' and *ulica* 'street' —, or *peskavator* — out of *ekskavator* 'excavator' and *pesok* 'sand'). The material was recorded through direct observations and from other writers' notebooks or from letters received from readers, mothers, grandparents (it is for this reason that we are not always certain as to the rigorousness or even exactness in recording the utterances and in transcribing these facts of speech).

As we have already said, very many studies are directed towards analyzing different language$_1$ aspects from the point of view of their relation to thought or of grasping the relations among objects and phenomena, etc. These researches find a favorable field for investigations in the study of word meaning and especially in the study of grammar.

A compact group of psychologists — those of Gruzia (Georgia) — were interested mainly in language$_1$ and primarily in the relation between child language$_1$ and thought, sometimes as manifested in bilingualism (A. Avelišvili 1950, 1953; N. Čirelašvili 1954; K. Mdivani 1954, 1956; M. Kolbaja 1955; N. Imedadze [1957], 1960 — especially about bilingualism —, etc., most of them mentioned here, apud R. Natadze 1957, 1966). In some other regions, similar interests led to the publication of theses,[49] or research reports on matters of detail, or syntheses.

N. Švačkin (1954) continued previous investigations into the language$_1$ of the preschool child, carrying out experiments regarding 'early generalization' (on the lexical level). K. Patrina (1955, 1959) analyzed in her dissertation 'The peculiarities of understanding word meaning by older preschool children' (the exact understanding of a word is achieved late after using the word in speech); and she also presented in an

[49] 'Candidates' theses — meaning the requirements for an intermediate scientific degree, preceding the doctor's.

article her research on the understanding of the metaphoric sense of words by children. G. Ljamina (1960) studied the development of language understanding at the age of 1-2½, through the way in which the connection between word and object is made.

Children's capacity to use words independent of the objects these words represent, the capacity to detach the word from the syntactic complex in which it occurs during communication, the awareness of some morphologic elements, were the object of studies carried out by S. Žujkov (1955, 1960) and S. Karpova (1955); the latter demonstrated that some older children can single out words from given sentences, with the exception of prepositions and conjunctions.[50] The initial stages in a child's acquisition of grammatical structure formed the object of F. Soxin's (1955) dissertation; whereas the development of grammatical structure with preschool children was analyzed by A. Zaxarova (1955) in her dissertation; V. Jadeško (1956) studied the psychological peculiarities of the learning process involved in the forming of sentences, from the age of 3 to 5; Z. Pegačeva (1956) dealt with children's understanding of sentences. The process of abstraction and of generalization in the course of the acquisition of grammatical structure were studied by S. Žujkov (1958), F. Soxin (1959), D. Bogojavlenskij (1958), and the connection between learning the elements of grammatical structure and a child's capacity to understand various spatial and temporal relationships formed the object of R. Karimova's (1955) dissertation.

Research on children's acquisition of certain elements of the grammatical structure (experiments with different word categories — and especially with prepositions) was carried out by N. Serebrennikova (1953), Z. Pegačeva (1956), M. Feofanov (1958, 1960) — the study of prepositions —, Ja. Meerson (1959)— the way in which different grammatical categories are acquired — V. Babin (1958) — schoolchildren's understanding of English sentences introduced by conjunctions that express contradictions, like *though, although*, etc. (placing the capacity for comprehension, at the age of 8). The process of learning the forms of grammatical cases by Russian children from the age of 3 to 7 was studied by A. Zaxarova (1958), and the agreement in gender and grammatical gender generally were the object of M. Popova's studies (1956, 1958). Many investigations (most of them experimental) led to the conclusion that during the experiments (that is to say by training) an evident progress is attained in the process of the child's language learning. The question of the so-called 'sense or feel of language' was still catching the interest of some scientists — A. Orlova (1955) for instance — and the application of the Pavlovian conception fostered attempts to interpret from this viewpoint the process of acquiring the grammatical structure (F. Soxin 1951, for instance, on the basis of the material furnished by Gvozdev and K. Čukovskij, sought even in such a way an explanation of 'the sense of language'). The mastering of pronunciation mechanisms in children aged 1 yr. 2 mos. to 2½ yrs. (31 children, observed longitudinally) was studied by G. Lyamina (1958). Among the works of synthesis about the development of child language, written for a larger public — of

[50] Results of similar experiments, but using a different procedure and referring to the Rumanian language, were presented also by Slama-Cazacu (1957a:383–1).

teachers mostly — let us name those by D. El'konin (1958) and N. Žinkin (1954).

As we have mentioned, psycho-pedagogical questions are of first concern in different research projects. Some are devoted especially to the school-child and refer to the role played by language$_1$ in the development of the child or to means of improving language$_1$. One of the best known psychologists, A. Ljublinskaja (1956, 1959) directed various research projects mainly towards this direction, demonstrating the role of words in the differentiation of the features of objects, in the genesis, storing and restructuring of the images of objects, as well as the way in which language$_1$ evolves (the increase of the vocabulary, the acquisition of grammatical structure, etc.). Z. Istomina (1960a, 1960b) dealt with the relation between language$_1$ and perception (of colors); whereas the relation between words and the images of objects was treated by D. El'konin 1955 (cf. Slobin 1966c:145), E. Fortunatova, M. Zvereva, D. Kiriuškin, in Zankov 1954, or M. Mallitskaja 1960. The development of the phonetic aspects of child language, as well as of the vocabulary and the grammatical structure in school children were the object of a study by N. Morozova (in Leontiev and Božovič 1950). Other research was undertaken regarding learning orthography — by D. Bogojavlenskij (1957) — and the influence of reading on correct spelling, by A. Višnepolskaja (1959). The group led by V. Artemov (1953, 1954, 1960) devoted large volumes to questions concerning language learning.

The development of the function of communication was treated less; we mention, however, two articles: a general one, by A. Jarmolenko (1957), about 'The pre-history of the need of communication in the young child', and another one about 'speaking in a group' — based on the observation of groups of children — by N. Kasatkin (1958).

The influence of the Pavlovian conception of conditioned reflexes and of the two signaling systems put its mark on some of the research of the period, devoted in part (especially by physiologists) directly to the consideration and investigation of language$_1$ from this point of view. This is the perspective from which N. Ivanov-Smolenski (1951) and his collaborators approached the interaction between the two signaling systems. M. Kol'cova (1953, 1958) carried out substantial research in connection with the evolution of the higher nervous activity of the children and, in connection with this, about the development of the second signaling system. F. Fradkina (1955), V. Volkova (1953), etc. dealt with the peculiarities of the formation in children of conditioned reflexes to verbal stimuli. A well known physiologist, N. Krasnogoskij (1952, 1956), devoted several works to the physiology of the development of speech and to the relationship between the type of high nervous activity and the different aspects of child speech. Luria's school went on performing interesting investigations into child neurophysiology.

Although it does not form the object proper of our study, let us mention here, too, the important development of Soviet 'defectology' and logopedics, within which certain studies also provided data about child language$_1$ under abnormal conditions. Among these, the deaf-and-dumb child's peculiarities in learning Russian: T. Vlasova

(1954) — about the influence of auditive deficiencies on the development of child speech —, R. Boskis et al. (1955) — about the formation of the grammatical structure in children with hearing defects —, Ž. Šif (1956) — among other topics, about the acquisition of the lexicon and of grammatical structure by the deaf-and-dumb children of the first classes —, S. Zykov, ed. (1956), B. Korsunskaja (1960; also in Zykov 1956: 38–70) — about the verbal communication of deaf-and-dumb school-children —, and A. Pungilskaja (in Zykov 1956:135–224).

3.5 *1961–1968*

The few years we can take into account when speaking about the present decade have been marked, on the one hand, by the definitive recognition of the study of child language — both in the various works produced by specialists, among them many linguists — and by the official inclusion of this field among the branches of linguistics (see the *Proceedings* of the 10th International Congress of Linguists, Bucharest 1967). On the other hand, we must remark that, while theoretic studies do also appear, a particular attention is being paid to applied research concerning logopedics, 'defectology' and — what is specific to this decade — linguistics applied to foreign language learning and teaching.

3.5.1 Many specialists that had distinguished themselves in this domain in the preceding decades now continue investigating or referring to problems of child language, in their different studies in psychology or linguistics.[51]

Continuing with persevering enthusiasm a preoccupation that he has been manifesting for forty years, M. Cohen, together with his collaborators, published in this decade a collective work, 'Studies on child language$_1$' (Cohen et al. 1962), in which he lets us share his experience in this area, giving methodological indications, suggesting problems for further study, proposing hypotheses. Let us mention from among these the proposal to study more deeply the influences the child undergoes in the course of learning a language (Cohen et al. 1962:26), or that of making comparative studies of babbling (his hypothesis is that babbling is not a sample of all verbal sounds existing in the different languages of the world, but it includes sounds that are not alien to the parents' language).[52]

[51] Because in such a short period several studies by the same author were published, we shall give up the chronological criterion and shall mention them in the alphabetical order of their authors.

[52] The exaggerated assertion that one could find in infant vocal production absolutely all the possible human vocal sounds, from all the natural languages, does not stand. But, on the other side, we must be careful with respect to chronology when assessing that babbling includes sounds which are in the parents' language: it depends on the stage of babbling we refer to, since in the beginning there are also sounds which are not to be found in the child's future mother tongue, and which might really exist in other languages; these latter are gradually eliminated, and the pre-phonemes that emerge represent ever closer sounds to those used in the language of the adults around the child (see also *infra*, the survey referring to Slama-Cazacu 1966f., 1967d).

R. Jakobson did not publish any new study in this field, but the appearance of the first volume of his *Selected writings*, printed in Europe (Jakobson 1962), meant, of course, the spreading into larger circles both of his *Kindersprache* ... and of other works (and first of all of *Les lois phonétiques* ...).

A very marked activity especially, in the field of logopedics and of 'defectology' in general, was carried out by L. Kaczmarek. A book written for a larger public and suggestively entitled 'Our child begins speaking' (Kaczmarek 1966) is an adaptation of his first work (Kaczmarek 1953). On data collected from 300 dyslalics, Kaczmarek (1962) studied the way in which the phonologic system is achieved in these cases; in another study (Kaczmarek 1967b), he tried to establish a procedure for the examination of the essential features of the verbal sounds (at the same time with a practical aim both for logopedics and for foreign language teaching). Of practical importance is also his continuing activity as editor of *Logopedia*, the journal of 'The Polish Society for Logopedics', as well as the first attempt to inventory the Polish logopedic bibliography (Kaczmarek and collab. [1965]), which comprises also a special chapter on child language$_1$.

Likewise consistent with the interest in child language shown in his first book, W. Kaper (1966, 1967, [1968a], 1968b) published articles and delivered a paper at the International Congress of Linguists in 1967. Speaking in his paper about the genesis of sentence production in children, he turned his attention to the difference between reproduced sentences and those formed independently, a problem that naturally led also to an article which raises the question: *Productive rules or imitation*? [1968a] (also 1968b). The author conducts the discussion in the light of theories of modern linguistics, about competence and performance, or about the two theories on sentence production in the child: on the basis of imitation or by some productive rules. In another article, published in *Lingua* (1966), Kaper discussed also the question whether a preschool child has a 'feel' for the implications of genitive and prepositions.

Besides carrying on his investigations into child language ('The verse in the development of the speech of small children' — Ohnesorg 1967a), K. Ohnesorg published numerous works by which he showed the strong upsurge in this field (taking over a title of Grégoire's, he speaks about 'The revival of child language study' — Ohnesorg 1962, 1964b). He advocated, too, the establishment of a new discipline — pedophonetics or pedolinguistics — (Ohnesorg 1964b, 1964c), presenting the exponents of this discipline to Czech and foreign readers, either in special articles that signaled the new contributions (Ohnesorg 1967b), or in reviews or in prefaces to works of Slama-Cazacu, Gvozdev, Rūķe-Draviņa (Ohnesorg 1963, 1964a, 1967b, Slama-Cazacu 1961b). In these diverse works, Ohnesorg presents also, by way of comparison, his own findings or makes interesting critical remarks and useful additions.

The articles of P. Oléron (1961; and Oléron and Herren 1961), from the beginning of the present decade, show the French psychologist's preoccupation with the development of the deaf-and-dumb child and, consequently, with his language$_1$. Somewhat later, the course delivered at the Sorbonne on 'Language$_1$ and mental development'

(Oléron 1966) proves his further interest in the relations between language$_1$ and thought, in the conditions of the normal and of the handicapped child.

J. Piaget (1963) is one of the collaborators on *Problèmes de psycholinguistique* (a collective volume of the participants in one of the symposia organized by the Association of French-Speaking Psychologists). Although it is not a study in psycholinguistics proper, his contribution is interesting for the evolution of the Swiss psychologist's conception: he insisted in it on the fact that language$_1$ is not sufficient for the achievement of logical structures, although it represents a necessary condition of it. In other books published at the same period, which do not focus primarily on language$_1$, Piaget ([1964a], 1964b) still made remarks about the relationship between language$_1$ and intellectual operations (especially logical operations and the symbolic function), or about language$_1$ and imitation, etc.

One of the most interesting monographs on child language of this decade is that published by V. Rūķe-Draviņa (1963), with material regarding Lettish, gathered from her two children. The author got the impetus for doing this research by reading W. F. Leopold's last volume (cf. Rūķe-Draviņa 1963:5); she was also acquainted with Gvozdev's book and with R. Jakobson's studies (cf. *ibid.*). The book offers a wealth of examples, the analysis goes into details, the method is rigorous — the author uses phonetic transcription, indicates for each example the child's age, notes the general behavior that is correlated with a certain utterance. A peculiarity of detail is that we find in it even references to dialectal influences on child speech. Other articles and papers completed this study (Rūķe-Draviņa 1961, 1965b, 1967a): about nursery language in Lettish, about the acquisition of the apical and uvular *r* sound (both supplying data in connection with Lettish-Swedish bilingualism, and supporting R. Jakobson's law about the late appearance in child speech of sounds that occur seldom in different languages — such as the /r/ sound). Her concern with establishing the existence of certain laws in the development of child language was manifest also in the paper delivered at the 10th International Congress of Linguists (Rūķe-Draviņa 1967a). The problem of multilingualism in the case of school children formed the object of another book (Rūķe-Draviņa 1967b), with special references to Lettish-Swedish; the linguistic method of noting and discussing the facts was aptly complemented by their interpretation. A useful review of K. Čukovskij's book (Rūķe-Draviņa 1965a), another one of H. Helmers' (1968) and an article about interjections and onomatopoeia (comprising also references to child language), written in collaboration (K. Dravinš and V. Rūķe 1962), served to complete a valuable and singular work of the European North.

The works published in this decade by Tatiana Slama-Cazacu continue to result from her interest in analyzing language$_1$ from a psycholinguistic or sometimes linguistic standpoint. a) She continued to study the relationship between language$_1$ and thought, by analyzing the development of grammatical structure between the age of 2 and 3 (1962a) or, in a more detailed way, by studying the forms in which children — speaking Romanian as a native language — express the oblique cases, i.e. the

genitive and dative (1962b). The data recorded from 200 subjects aged from 2 to 7 show that when confronted with the choice Romanian offers between an analytic (Rom. *a lui Maria*) and a synthetic (Rom. *a Mariei*) form to express the same content, small children prefer the former, to which they add also certain variants non-existent in the standard language.[53] b) Another direction is the study of the way in which the communication function of language$_1$ is manifested in the case of children. Relying on material gathered from 360 children, the author demonstrated the early appearance of the communication function, its predominance (in normal conditions of education) as compared to the so-called egocentric monologue or soliloquy, analyzed the forms of dialogue between children (1961a:37; 1961b, cf. also the review of Appel and Matejček 1963; 1966a, 1966b). The research revealed at the same time the role played by language$_1$ in child development and especially in the development of social relations (see also 1966c). c) The place of child language$_1$ study in psycholinguistics was discussed in several articles and the book 'Introduction to psycholinguistics' (1965b; 1966e; 1968); and its connection with the general theory of language$_1$ and primarily with the problems of context (referring to lexical and grammatical phenomena) was dealt with in the book 'Language and context' (1961a:200–3). d) Especially in the last years she has increased her activity in the study of the incipient forms of language$_1$ in the younger child and mostly of the formation of the phonemic system (stressing theoretical problems — of form and substance in the genesis of the phonematic system, the transition stages, from 'biological sound' to 'pre-phonemes' and phonemes, etc. —, as well as methodological problems — such as devising a method that would permit objective comparisons, questions regarding the transcription, etc. —, or proposing certain hypotheses — 1960b, 1966f, 1967d). Starting from the idea that it is necessary to verify the thesis of the gradual elimination, under the influence of adult language, of the initial sounds, that would constitute a common background in children from different geographic regions (see also 1963, the review of M. Cohen), and having in view certain methodological principles (the necessity of studying a large number of children and of using a unitary methodology, as well as procedures of exact and objective analysis — sonagrams, etc. —, and a complex and consistent system of transcription — that would permit the comparison of data recorded by different authors), the author suggested[54] international co-operation based on the principle of a shared methodology, to which Czech (K. Ohnesorg), Polish (L. Kaczmarek), Italian and Dutch (G. Francescato) and other scientists (see 1966f, 1967d) rallied.

We cannot omit mentioning here also an American researcher coming from Europe (and whose book was published in Europe), Ruth Hirsch Weir (1962), author of *Language in the crib*, a book that marked a date in the history of research into child language$_1$, first of all because it meant the beginning, in scientific study, of researching

[53] Syntheses, in different languages, in general of the researches she made on the ontogeny of the language-thought relationship, were published in: 1965a, 1965b, 1966c, 1966d, 1967a, 1967c.

[54] In 1963, on the occasion of a meeting of the mentioned specialists, at the Summer Courses organized by the University of Bucharest at Sinaia.

a fact noticed by many specialists: namely the soliloquies of the little child, especially when he is alone, just before he falls asleep at night.

3.6.2 Among the works produced by psychologists or being of direct interest to psychology, one may note some monographs (theses) devoted to child language$_1$, or studies that are part of a prolonged activity directed especially to this domain.

The French psychologist M.-M. Braun-Lamesch (1962, 1964, 1966) a collaborator of P. Oléron's, carried out research regarding the role of context in child language$_1$ (she also studied the relations between movements and vocalizations in the infant). In Great Britain, an explicit psycholinguistic stand-point was adopted by D. Bruce (1964; Bruce and Pugh 1966), studying the capacity of little children to make a word-sound analysis (the difficulties in this respect begin to be overcome only at the mental age of 7; however not even at 9 have they been completely eliminated). Another English study deals with the immediate verbal memory and the mastering of the statistical laws of language in 6-year-old children. In his *Psycholinguistic approaches to the study of development*, D. Bruce (1965) tried to give a synthesis (although not an exhaustive one) of different investigations carried out in this field. A monograph of the Italian psychologist Ada Fonzi [1967] examined the language$_1$ of children aged from 3 to 7, concentrating on the relation between egocentric speaking and that meant for communication and pointing out the predominance of the former under the given circumstances (in which each child was however let play in isolation, being introduced alone and accompanied only by the experimenter, into the respective experimental situation). Referring to this research and to other general problems of language$_1$, Angiola Massucco-Costa ([1967]:20–31) underlines the role of language$_1$ in the development and function as instrument of socialization, and shows that she does not share all her colloborator's, A. Fonzi's, hypotheses. The original topic of a German monograph, written by H. Helmers (1965), is the analysis of the way in which child language expresses humor (on material provided by papers written by pupils of the 1st-10th form, and on oral expressions too); let us mention, among others, the chapters on the comical verbal contents and about the linguistic field of laughter in the child. M. Lewis's [1963; ed. 1967] book about *Language, thought and personality in infancy and childhood* is an account of the growth of language in relation to the general development of the child; the book is interesting by the correlation of language$_1$ with the ensemble of development, but contains little material referring to language itself (even to language$_1$). One of Lewis' central ideas is that of recognizing both the role of society in the growth of language$_1$, and the inborn peculiarities pertinent to the human species and to the heritage of each individual; an idea for which Lewis finds a brief and adequate expression: 'A child is born a speaker and born into a world of speakers' (p. 13). A French psychologist attracted lately by child language$_1$ study is also Ph. Malrieu, who published an interesting and useful article about pre-language$_1$ in the first year of life, in connection with the child's social life (Malrieu 1962). Another article deals with the way in which child thinking is reflected in the questions he asks —

often 'turning to the adult in order to get rid of his doubts' (Malrieu and Laurenties 1966). In the South of France too, G. Noizet and C. Pichevin (1967) carried out a genetic and comparative investigation into syntagmatic and paradigmatic organization (on the basis of verbal association experiments), concluding that children are usually inclined to establish paradigmatic associations.[55] The Norwegian psychologist R. Rommetveit performed, in collaboration with E. Turner (E. Turner and R. Rommetveit 1967a, 1967b), experiments regarding the active and passive voice in child language. The Krakowian psychologist Maria Przetacznikowa (1965) published her second monograph on the development of the sentence function and structure with preschool children. The relations between language$_1$ and thought also form the target of an investigation conducted by H. Sinclair-De Zwart (1967), within J. Piaget's school of Geneva. Her conclusion is that 'it is not the possession of certain forms of expression that structures the operation', and therefore 'the language$_1$ is neither sufficient nor necessary in the constitution of concrete operations'[56]; nevertheless, there are close relations between language$_1$ and thought (p. 156).

Investigations concerning primarily a linguistic methodology are quite numerous in this decade. Besides those discussed already *supra* 3.5.1, we would like to mention also those effected by other research workers, who — with but few exceptions — started publishing in this domain only in the '60s. The young Romanian phonetician A. Avram (1962a-b, 1967a, 1967b) made certain observations on linguistic phenomena noticed with his children (sound substitutions, forms encountered in the written language of one of his children between the age of 4 yrs. 2 mos. and 6 yrs. 8 mos.), as well as remarks about baby talk (the form of Romanian language used by adults when addressing children); in a theoretical article, he enlarged upon the idea that the child develops a personal linguistic system, different from the general one characteristic of the adults. A contribution regarding the study of child vocabulary in Slavic languages (dwelling particularly on interjections and diminutives, and pointing out the child's influence upon language) was presented by O. Horbatsch (1967) at the 10th International Congress of Linguists. In Yugoslavia, few works have been issued after M. Pavlovitch's; the more interesting are Melanija Mikeš' investigations concerning the Serbo-Croatian-Hungarian bilingualism (1964), the assimilation of

[55] Results contrary to those presented by Slama-Cazacu (1957a:64ff.), regarding preschool children (who establish mostly juxtapositional, syntagmatic associations of the type: Rom. *cal-căruță* 'horse-cart'). In the case of school children, the paradigmatic associations might be caused by habits created owing to the methods of teaching (the sequential paradigmatic approach in learning the conjugation of verbs, the declension, etc.).

[56] 'The learning' of these terms constitutes the major point in research of this kind; unfortunately, the author gives but a few indications about this stage of the experiment. It is, however, certain that it depends on the way in which this 'learning of some forms of expression' was achieved (if, for instance, one had insisted also on their content — which was rather difficult), forms that were separated from the development of the rest of the vocabulary and learned artificially and forcedly. Moreover, the generalization of the conclusions is limited: the fact that possessing certain expressions was of no help in solving the problems in the respective tasks cannot lead to the conclusion that language$_1$ AS A WHOLE is inefficient for thinking.

certain grammatical categories (1967), as well as certain methodological aspects (Mikeš and Vlahović 1967). Other contributions devoted to child language in Serbo-Croatian are: I. Furlan's (1963) monograph — dealing especially with Croatian children — and Smiljka Vasić's (1965, 1967a, 1967b) researches, on a great number of children, concerning the development of articulation; Miljá Stošič (1964) made an inventory of the vocabulary of Serbian school children. The development of the pre-language and then of the language (particularly with respect to the phonetic aspect) in the case of a child who learns first Italian, as well as observations on the subsequent interference with a second language were discussed by Walburga von Raffler-Engel (1964b, 1964c, 1965, 1967a). Making use of comparative analyses and considering also data offered by other authors for different languages, Maria Zarębina (1965) presented her observations on the way her three children had learned Polish as a native language. Acoustic analyses — by means of sound spectrograms — of the sounds emitted by the new-born or by the infant, were performed by the phoneticians D. Kostić and M. Stošić (1963) of Belgrade, and by a student of M. Seeman, Eva Sedlačková (1967), of Prague. An analysis (consisting mainly of comments on a record) of the vocal emissions during the first nine months of the child's life was published by H. Herzka (1967).

Among the works of a more general character, a study by G. Francescato (1965) stands out, advocating a link between linguistics and psychology in child language study. From a similar point of view, R. Titone (1964a:159–90; 1964b:67–100) made references to child language$_1$, regarding either the acquisition of the native language, or the learning of a second language.

The problems of children's bilingualism were treated (other than by the previously mentioned authors: M. Mikeš, W. von Raffler-Engel, etc.) also by J. Macnamara (1967a, 1967b — with regards to French-English bilingualism in Canada, or Irish-English bilingualism), and by Andrée Tabouret-Keller (1963): French-German bilingualism from the age of 1 yr. 8 mos. to 2 yrs. 11 mos., of a girl brought up in a bilingual milieu. An interesting dialectal study through the medium of child language observation was carried out by M. P. Meijer (1962), who analyzed the French language used by 10-year-old children from Lausanne.

On a practical level, of particular interest is the research by the French psychologist A. Leroy-Boussion (1965, 1966), who dealt with the way in which the child learns to read (the most frequent mistakes, differences between boys and girls in this respect, etc.). Likewise useful are the remarks of J. de Ajuriaguerra and collaborators (1963) about dysphasic children (disorders of the entire personality are to be observed, caused by the fact that 'gestaltization' is disorganized: pp. 134, 138). N. O'Connor and Beate Hermelin (1963) studied language$_1$ disorders with intellectually sub-normal children, aged from 10 to 16 (on a large number of cases and using to a great extent the experimental method). Mira Stambak (1966) was interested in the relation between language$_1$ and the general aspects of psychic processes, such as reflected in language$_1$ disorders. At the same time there was published also, in a French edition, the book

'Language$_1$ disorders' by the Czech specialist M. Seeman (1967). The language$_1$ of the deaf-and-dumb child formed the subject of a book written by the Polish research worker Lidia Geppertowa (1964), who studied especially the relation between language$_1$ and thought. Performing subsequent investigations, interesting both for 'defectological' theory and practice, and also for language theory concerning normal children, B. Tervoort studied the peculiarities of the deaf-and-dumb child's thinking in connection with his language and with its esoteric symbolism, and analyzed the communicative structure patterns of the deaf children (Tervoort 1961a, 1961b, [1963b?], Tervoort and Verberk 1967), always drawing parallels with the language of the normally hearing ones. In Belgrade, Smiljka Vasić [1968] also studied the evolution of the phonematic structure in deaf children and generally their language as compared to that of children with normal hearing.

3.5.3 A number of investigations in psychology or psycholinguistics refer also to various aspects of child language. The relations between language$_1$ and thought development were dealt with by A. Ranzi and A. Venturini (1968a, 1968b), while M. Battacchi and M. Montanini (1965) also studied the mental processes connected with the syntactical structuring of the sentence. The part played by education in kindergarten or in special institutions, in the development of this relation, was emphasized by the Polish research worker S. Kowalski (1962) and the Italian F. Rasi and collab. (1961). The relationship between child language$_1$ and memorization was experimentally investigated by R. Ducharme and P. Fraisse (1965), and by B. Fechner (1965) as well. L. Bartha (1966) studied the mechanism of the generalizing effect of the verbal sign in children. An analysis of word frequency in child language was done by E. Beier and collab. (1967), while L. Somfai (1967) drew up an inventory of the verbs in the written vocabulary of 11-year-old Hungarian speaking children. In Poland, Maria Chmura (1964) devoted, more recently, several studies especially to the phenomenon of word creation by children.

An approach directly connected to linguistics is that of B. Malmberg (1964), who discussed words of infantile origin (referring to biological functions, etc.), and of E. Alarcos Llorach (1968). Y. Lebrun (1967), dealing with phonetic and phonologic aspects, brought into discussion also child language; while J. Marshall and R. Wales (1965) refer to modern linguistic theories also in order to find an explanation of the prime characteristics of child language. Z. Bojadžiev (1968) made observations on the role played by the rural environment in the genesis and growth of the language in Bulgarian speaking children. The same interest in the relationship between the standard language (of adults) and child language (in connection also with the problem of imitation) is reflected in a study of S. Gili Gaya (1961), for Spanish, and in a more recent one, of R. Söderbergh (1968), for Swedish.

The preludic imperfect is still of interest to certain linguists: J. Pohl (1967) and L. Warnant (1966) gave interesting contributions in this direction. Suggesting several problems for further study, D. Pregel (1963) proposes also the stylistic study of

child language.[57] J. Meijers [1962], of Holland, gave a general description of child language$_1$, on the basis of data offered by various authors.

In a number of recent treatises or monographs written by well known specialists in child psychology (G. Clauss and H. Hiebsch 1962; V. Příhoda 1963, 1966; P. Osterrieth 1966), or in language$_1$ psychology (H. Hörmann 1967; R. Rommetveit 1968: 242–57), chapters were devoted to language$_1$ development or to some particular aspects, where the author also presents syntheses of data already existent in the literature (Příhoda 1963 reports on personal research as well).

As far as the applicative side of research is concerned, let us mention contributions which deal, for instance, with the articulatory capacity of children: Annie Anzieu (1966) — on children's dentary articulation troubles —, M. Battacchi and collab. (1964) — a wordlist for the examination of the phonetic articulation of Italian preschool children —; Battacchi (1968), inventorying the sounds pronounced by 13 Italian children aged up to 3, also suggested procedures for studying the development of articulation. F. Bacher (1966) offered some data on verbal aptitudes and discussed the usefulness of tests in this direction. The written language (i.e. problems concerning punctuation or the analysis of certain causes responsible for difficulties in the learning of writing or the comparison between the written and the oral language) formed the object of studies by J. Simon (1966), N. Galifret-Granjon (1966), C. Chiland (1966); the psychological aspects involved in children's learning to read were tackled by G. Mialaret (1966). E. Novicicov (1964) presented the results of some experiments in connection with the acquisition of Russian by Romanian children, and A. Drahos (1967) discussed questions raised by teaching Slovakian in Hungarian schools.

From among the projects of greater scope, which have yielded by now some written materials, those worth mentioning are those that concern the learning of English and French as native languages: R. Handscombe and R. Hasan (see Nuffield Foundation [1965–68]: as part of a number of projects on foreign language teaching) made transcriptions of the language of English children aged from 8 to 12; they also made preliminary analyses of some of the utterances registered, presented the grammatical analysis code, as well as a study on the topics of conversation and of 'centres of interest', in 11- and 12-year-old children; transcriptions of written language have also been made. As part of the same projects of the Nuffield Foundation (1965ff.), J. Leclercq also made transcriptions of conversations of 9-year-old French children. Some of the methodological problems of the French project on the grammars of child language were presented by M. Coyaud (1966). The group J.-B. Boons, M. Coyaud, C. Pichevin (1966) published a first account of the research into the acquisition of French by children aged from 20 months to 4 years. A project on the intensive study of baby cries was presented by P. Ostwald and collab. (1967).

The investigations in the domain of child language$_1$ pathology and particularly with respect to 'defectology' and logopedics have become numerous in recent years.

[57] See also the previous study published by Slama-Cazacu (1957b), in which 'the style of child speech' is analyzed.

L. Croatto's (1966, etc.) practical activity in the field of Italian child audiometry as well as of language deficiencies is interesting not only for Italy, but also on an international scale. The language$_1$ of the mentally retarded child or generally language$_1$ disorders under severe pathologic conditions — or of various degrees — have formed, of late, the object of a number of particularly useful investigations: M. Atzesberger (1962, cf. Rūķe-Draviņa's review), P. Bryant (1967), R. Canestrari and M. Battacchi (1968), K. Lovell and B. Brabpury (1967), Mariana Roşca (1965; M. Roşca and D. Cotuţiu 1958) — about mentally retarded or subnormal children —; H. Hécaen and R. Angelergues [1965], B. Inhelder and E. Siotis (1966) — general troubles in language$_1$ development, disphasia —; Zofia Kordyl (1968, com. L. Kaczmarek) — on psychological problems of aphasia in children. In Czechoslovakia, 'defectology' and logopedics are represented either by the publication *Československá defectologie* (1966, 1967, 1968), in which there are presented also interesting data about child language$_1$ (from the point of view of phonetics, of logopedics, of speech disorders, etc.); or by monographs, as for instance that published in collaboration by the well known specialists B. Hala and M. Sovák (1962). The language$_1$ of the deaf-and-dumb or of hypoacusic children forms also the object of a vaster project — to which B. Tervoort (P. Doctor 1967), too, is contributing —, or of research, presented by L. Elliott et al. (1967), by D. Ciumăgeanu and D. Popiţan (1961) — concerning pronounciation errors in the speech of Romanian re-educated deaf-and-dumb children. In Poland, logopedics is directly represented by the journal *Logopedia*, which has appeared since 1960 under the editorship of L. Kaczmarek (and which is since 1963 the organ of the Polish Association for Logopedics); the articles published in it refer nevertheless both to articulatory defects (the field of logopedics proper) as well as to the language$_1$ development of normal children. In Romania, some materials produced by specialists in logopedics contain also data regarding child language$_1$; see C. Calavrezo 1966, 1967 — especially concerning the reading and writing peculiarities of stammering children —, *Studii şi cercetări de logopedie* ('Studies and research in logopedics') 1966, *Tulburările limbajului scris* ('Written-language disorders') 1967, C. Păunescu 1962, etc.

3.5.4 Soviet research [58] has been directed especially towards the analysis of the preschool and schoolchild's learning of the Russian language, towards rendering evident the part played by language$_1$ within the general development of the child, towards the study of foreign language learning, and towards certain problems of 'defectology'.

The phonetic aspects were dealt with by L. Žurova (1963) — the development of the analysis of word sounds with children aged between 3 and 7 —, G. Ljamina and N. Gagua (1962, 1963) — particularly the formation of correct pronunciation with children aged from 1½ up to 3 —; L. Aidarova (1964) discussed also the problem of the 'sense or feel of language', in connection with children's gradual conceiving the word as a meaningful form; while S. Žujkov (1961) presented results obtained in experiments

[58] References to these are to be found also in D. Slobin's studies mentioned above.

concerning the transfer of the components of an operation with certain morphological elements, to an operation with other elements. A monograph about the language development of a child up to the age of three years has been published, in Gruzian (Georgian), by A. Avelišvili (1961).

The regulating role of language$_1$, and in general its relations with the child's psychic life as a whole, continued to be the center of interest to the Soviet specialists, who either dedicated new studies to these problems, or discussed them within surveys of previous research: S. Žujkov (1965), A.A. Leontiev (1965), A. Ljublinskaja (1964, and especially 1966), A. Luria (1961), G. Rozengart-Pupko (1966).

A stronger tendency towards the study of foreign language learning can be observed: general problems and phonetic aspects (V. Artemov [ed.] 1966, 1968), English language learning (V. Aljakrinskij 1963 — the comparative imitation of certain Russian and English vowels by children from 4 to 7), foreign language learning by preschool children (E. Šarapkina 1965), Azerbaijan children's learning of Russian (F. Ibragimbekov 1961).

On the physiological line, concerning the conception of the two signaling systems, let us mention Maria Kol'cova's (1966) study about the physiological conditions of the development of the word as signal, and B. Poršnev's (1964) study on echolalia as a stage in the formation of the second signaling system.

As far as 'defectology' and logopedics are concerned, interesting works appear, such as the study of the genesis of stammering in the child, by R. Levina (1965) — also author of a study on spelling errors with maldeveloped children (Levina 1961) —, M. Xvatcev's (1961) handbook of logopedics and another book by the same specialist in collaboration (M. Xvatcev, S. Šavalin 1961), about the psychological peculiarities of the deaf schoolchild (both books containing also observations about the language$_1$ of the normal preschool and school child).

IV

The reader is surely expecting certain conclusions — which, however, he can almost reach himself.

At least one conclusion is obvious, if only the reader would cast a glance on the great number of works mentioned and especially on the importance of the names that have illustrated this domain in Europe.

Another conclusion may also be very easily drawn, if the reader considers the variety of perspectives from which child language was approached: linguistics and psychology, pedagogy and neurology, 'defectology', logopedics, etc.

But after these evident conclusions a question emerges, and this one is not so easily answered. What made Jespersen and Piaget, Vendryes and Luria, van Ginneken and Jakobson, Grégoire and M. Cohen, and so many other research workers not less renowned or less important in the history of the respective sciences, what made all these scientists abandon for a while their direct or permanent research object, and

bend — in the proper sense of the word — over these unassuming subjects, from whom, nevertheless, one always learns more than out of books? What made other European specialists dedicate almost all their activity to the same study — of cries, of mumbling apparently nonsensical, of the often cryptic galimatias, and then of the chattering that gradually gives way to the not seldom sophisticated and refined language of adolescents? Was it the pleasure of getting in touch with these little creatures full of mystery? Was it the charm of discovering less known aspects, that also provide an inexhaustible source of newness and originality in the domain of research or in the academic world? Was it perhaps a way to understand better some aspects of their central object of study — the general laws of human psychology, of linguistics, of neurology, etc.? Was it out of practical requirements — of educating normal children and of therapeutics of speech disorder? Was it the convenience (only apparent, at that, when the investigation becomes scientific) of researches who had daily under their eyes docile (again seemingly) and charming subjects?

All these, or part of them — if we refer to each researcher separately — were the real causes. And it is quite certain that all these causes persist and that they will be permanent impulses towards further studies in this field in Europe (or in any part of the world where specialists have leisure to embark upon research and where the most elementary tasks of didactic activity or of special investigations in the respective field have been exhausted and surpassed, or where requirements for similar studies do arise).

But the study becomes more and more detached from the affective motivations, it becomes ever less the concern of a parent and is taken over by the 'indifferent' specialist — anyhow, detached from the quality of being the parent of a certain 'case' — or even by teams of research workers. One's own child is replaced by large groups of subjects under study, the observations become more systematic, the objectives more precise, and an interdisciplinary perspective necessary. Applied linguistics, applied psychology, 'defectology', child psychiatry impose certain research themes, and theoretical linguistics or general psychology demand that a number of modern theories or hypotheses be put to a test through the study of child language.

The European research in this domain began by being original and detached from the American linguistic conceptions of the various epochs; today one may notice (especially with younger research-workers) an adoption — not always creative — of theories or methodological procedures from transformational or generative linguisitcs. To the extent to which these influences will be assimilated we may expect interesting research. It is likewise probable that a more precise psycholinguistic concern will be achieved, and it will thus be particularly useful (in this last direction, that of a PSYCHOLINGUISTIC approach on a large scale, American research has now the advance in child language research). Let us also expect the change-over from the presentation of results obtained from isolated cases, or from the investigation of details, to the great syntheses — but based on facts collected through the author's own investigations.

Perhaps the decade in progress, or at least the 80s will bring us also such a synthesis (at the same time, comparative for all European languages), based both on the detailed research done until now in different European languages, and on further investigations carried out with exact procedures and using an international and adequate transcription system, and done by big teams, on a large number of children, that would allow a statistical elaboration of data, the establishment of frequencies and the affirmation of the validity of the generalizations.

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STUDIES OF LANGUAGE PATHOLOGY[1]

HENRY HÉCAEN

It was in the Western European countries that the first works on language pathology appeared and where the tradition born from the works of Bouillaud or Broca, of Wernicke or Liepmann, Bastian or H. Jackson has been maintained since then.

The period between the two World Wars is above all marked by the reaction against associationalism, the reaction which P. Marie had initiated as early as 1906, and also by the renewal of the previously misunderstood concepts of H. Jackson. This period of aphasiology is, in effect, essentially dominated by the names H. Head in Great Britain, Goldstein in Germany, and von Monakow in Switzerland.

H. Head (1926) adopted the essential aspects of H. Jackson's thought: a conception of language as a symbolic and voluntary activity, a distinction between automatic and propositional language. He integrates into this conception the distinction between the words which one chooses, and the syntax by which one realizes sequences.

Language is thus for H. Head a function of symbolic formulation, an activity which aims at the expression of thought by signs, that is by propositions. But on this point he goes further than Jackson since he outlines a theory of verbal mediation: all the acts which necessitate a preliminary verbal formulation could be altered in an aphasic, whether it concerns the reproduction of the gestures of the observer, who is situated opposite the patient and covers his eye or his ear with either hand, either to the right or left (an act which must be evoked in verbal formula in order to be reversed), or whether it concerns the setting of a clock. The more the symbolic formulation preceding an act is complex and abstract, the greater the chance the realization of this act will have of being altered by the aphasic (ideational or ideo-motor apraxia). The signs of language are not the only ones which play a role in symbolic formulation, but this formulation represents an indissociable whole.

H. Head thus defines aphasia as a disturbance of the symbolic function altering the capacity to utilize signs and assuming the character of a regressive disintegration. That which is disturbed in aphasia is the semiotic function, not the symbolic repre-

[1] In order that a review of language pathology fulfill its purpose, it ought to treat the developmental language disorders (dysphasias, dyslexias and dysgraphias), as well as aspects of language in psychotics and neurotics. The problems concerning these two subjects appear to us to be too different from those of aphasias for us to hope to cover them, especially since our competence in these subjects is very limited.

sentation itself. In this sense, there can be no pure forms according to him, and he goes so far as to assert that, in P. Marie's anarthria, as in pure verbal blindness, there is always a disturbance of verbal formulation. The unity of aphasia is thus total. However, H. Head would distinguish between diverse modalities, for he establishes a double hierarchy. One, in the Jacksonian perspective, goes from the most automatic to the most voluntary: verbal and articulatory habits, the link between sign and signification, utilization of grammatical forms, adjustment of signs to an intention in the expression of thought. The other, between the moments of expression and reception, introduces a distinction between the noun (the word) and the sentence (a proposition implying an intention of the subject).

Head does not accept a precise localization, since these varieties do not correspond to a precise and different impairment. He admits, however, that the lesion of the lower part of the rolandic circonvolutions of the left hemisphere provokes a verbal aphasia, while the most posterior lesions provoke syntactic aphasia (temporal superior gyrus), semantic aphasia (supramarginalis convolution), and nominal aphasia (angular convolution).

The contribution of Gestalt theory to neurolinguistics is less in a renewal of methods of approach, K. Goldstein's last work (1948) rediscovering the anatomoclinical correlations, minimized in his first studies, than in the accent put on two phenomena. K. Goldstein puts forth the difference, in the interior of language, between the sensorimotor processes which constitute its instrumentalities, and the psychological function envisioned in the frame of a dialectic, thought-language relation. In the second place, language is an integral part of the human organism in general, and aphasia cannot be viewed as a specific deficiency, but as a general process of defense by which the organism responds to a particular disturbance. The prototype of this massive, economical defense is represented by the 'catastrophic reaction' which reduces the verbal activity of the subject.

Within the framework of Gestalt theory, K. Goldstein (1927, 1933) distinguishes between the disturbances which affect the instrumentalities of verbal expression and those which perturb the function itself; the instrumentalities depend on localized lesions, while, since the function is perturbed, one cannot attribute a particular disorganization to a specific lesion. In effect, each lesion involves a definite disturbance, but the boundaries of this functional disorganization are always exceeded by the global reaction of adaptation. A correct performance by the patient does not mean that the normal function has been preserved, for the subject can utilize functional readjustments, that is, detours. Failure does not signify incapacity, for it is perhaps linked to the attitude of economy of the patient in a given situation. The deficiency is only the product of the alteration of the whole of this functional dynamism, and is linked to the modification of the ground-figure relation; it results in a dedifferentiation of the figure in regard to the ground, the lesion attenuating the dominance of the figure process in regards to the ground process. This dedifferentiation reduces the subject to immediate reactions and causes him to lose his freedom; at the same time, the disappearance of certain structures, bringing about a loss of incentive, involves the dis-

appearance of certain superior aptitudes. Aphasic symptoms ought, then, to be replaced into the proper framework of a global, cerebral disorganization. The unifying element, throughout the multiplicity of expressions, is the loss of the categorical attitude, that is, of the capacity to seize, simultaneously, reality as a symbol of an object and the object as susceptible of presenting diverse realities. The patient no longer grasps the relations which exist between the thing and the other things that it symbolizes; he can no longer adopt a classificatory attitude towards them. The aphasic regresses from an abstract language to a simple, automatic verbal ability, towards a more concrete level of realization of language. The latter may be divided into four modalities: a representative language (propositional activity), an expressive language (emotional), a verbal ability (language strictly dependent upon the concrete situation), an everyday language of very uncertain definition.

In a similar perspective are the analyses of von Monakow (1914, 1928), who sees in language disturbances a disorganization which affects the chronology of the processes which underlie the function. But the most important concept is that of 'diaschisis', that is the process of inhibition secondary to the cerebral lesion and which is propagated according to the type of cells and their arrangement.

At the moment when the Gestaltist theses were triumphing, Lotmar (1936) was able to bring forward a series of arguments, as much anatomoclinical as theoretical, which contradicted the theses called noetician and, in particular, the concepts of Gelb and Goldstein (1920). Thus, from the clinical point of view, Lotmar insists equally on the fact that, in many of the observations which have served to edify these theories of figure-ground dedifferentiation, the results of clinical tests can just as well be interpreted as the repercussion of the verbal disturbance on thought. If aphasia results from this dedifferentiation, it would not be surprising that there existed no aphasic disorder when the discrimination of the aggregate, in particular, was the most disturbed. The fact that aphasics cannot find the name of objects should not be considered as a regression of behavior: the patient indicates the use of the object and shows thus that he recognizes it; he gives synonyms of the same conceptual level, which appears to eliminate the possibility of a loss of categorical attitude.

Lotmar thinks that it is necessary to return to a conception in which disturbances of verbal instruments are not determined by their quality of symbols, but by their quality of acoustico-kinesthesic formations of a superior level. Each stage of the development of language, expressive as well as receptive, would correspond to these hierarchized formations. If, in a normal state, a formation functions as a unit, a cerebral lesion can disintegrate it into the diverse kinesthesic and acoustic elements which have genetically constructed it.

Since lesions can be determined which, although they involve severe praxic, gnosic and noetic disturbances, do not determine language disturbances specific to aphasia, Lotmar concludes that 'the disturbances of thought in general, which complicate aphasic disturbances, cannot be considered as the origin of the latter, but rather as the after-effect of the speech disturbance on the noetic element of the whole '"thought-

language" process'. For Lotmar, the principles of the theory of the whole cannot in any case contribute any information about the particular acoustico-kinesthesic components of these formations, and for him it is important to know their genetic history.

During this same period there persists, although with less influence, the tendency to isolate the functional cerebral centers bound to a particular category of performances. Kleist (1932-62), for example, will be the most notable representative in Western Europe for having distinguished language disturbances from other perceptivo-motor disturbances only by the greatest finesse and complexity of altered cerebral mechanisms. For him, each aspect of the realization of language corresponds to a particular center.

Far from this conception of the cerebral mosaic, Ch. Foix (1928), without repudiating however the ideas of his master P. Marie, is nevertheless the witness of a return to an anatomoclinical empiricism. Foix is interested, thus, in distinguishing three processes at the heart of the aphasic phenomenon: an amnesic process, an agnosic process and a dysphasic process, thus stemming partially from the distinction between an aphasia of reception and an aphasia of expression.

Foix connects with amnesia, besides the lack of verbal evocation concerned essentially with substantives, intoxication by the word, paraphasias and the difficulty of syntagmatic ordination of sentences: acalculia and apraxia, which often accompany aphasia, are also phenomena of amnesic order, and all this in a conception identical to that of the intellectual disorder invoked by P. Marie such as forgetting things learned by didactic processes.

The notion of agnosia permits Foix to reintroduce the idea of a sensory disorder in aphasia, so severely fought by P. Marie, since this agnosic disorder 'makes valid for Wernicke's aphasia the name of sensory aphasia', and because it is 'characterized by a disturbance of the comprehension of sensory perceptions, notably of language spoken or read'. Faithful however to the thought of his master, Foix maintains that it is a question of a disorder of the comprehension and not of perception, a disturbance of the comprehension totally different from amnesic disorder. Auditory agnosia, amusia and visual agnosia stem from the same process.

The separation by Foix of a dysphasic disorder (properly aphasic), from the anarthia observed in the motor aphasia of the classics, indicates a remarkable analysis of the expressive disorder. This disturbance concerns conjointly speech and writing, and arises from a 'comprehensive and conceptual' difficulty. It does not affect simple sounds to any degree. True dysarthria occurs only rarely. It is impossible here not to think of ideo-motor apraxia. According to Ch. Foix, the dysphasic process is essentially linked to damage to the parietal lobe, while the amnesic process comes from damage to the temporal lobe. As for the agnosic process, it responds to variable lesions according to the perceptual channel considered.

Th. Alajouanine made the synthesis of his own conceptions of aphasia with Moziconacci (1947) by studying the evolution of ideas about aphasia, the guiding principles

of a symptomatology of language disorders, the intellectual state of aphasics and finally the problem of reeducation in several articles appearing in the same review. Beginning with the principle of the automatico-voluntary dissociation of language which he accurately calls the Baillarger-Jackson principle, Alajouanine maintains that the different types of aphasia can be reduced to the different degrees of this dissociation, which in fact amounts to three elements: disorder of the voluntary evocation of vocabulary, disturbance of the syntactic construction of sentences, inability to conceive of language sets.

Nevertheless, he recognizes that there are global aphasias where the dissociation does not exist, but they represent only initial stages comparable to the phases of shock of hemiplegias.

Ombredane (1951) systematizes the data acquired to date. A large part of his work is represented by a remarkable report on the history of ideas on language disorders. After this critical review of the facts and their interpretation, Ombredane, faithful to the principles of Jackson, delimits the levels of realization of language while taking into account both the data concerning its acquisition and the objective conditions of its realization. He seeks to study the problem of pathological language from all angles. The problem of aphasia is above all for him that of structure itself and of the interdependance of the following three aspects: (1) the degradation of symbolic aspects; (2) the alteration of sensori-motor components; (3) global psychic modification.

From the functional point of view, aphasia is a syndrome of a disintegration of the elaboration of verbal propositions, of which the essential element is, according to the Jacksonian idea, a dissociation between the more voluntary uses of language, which are more or less profoundly altered, and its more automatic uses, which are not only preserved but even liberated.

The alteration of the sensori-motor components is the aspect to which an analysis leads if conducted according to the interplay of the analysors and the effectors which constitute the organs of language and assure what one might call the gnosic and praxic equipment. On the motor level, the alteration effects the motor flexion of language (phonetic disintegration syndromes); on the sensory level one notices an elevated threshold of comprehension where an auditory sensory factor ought to intervene.

The global psychic modification is the aspect to which the study of behavior leads, as much outside of the operations of language as well as on the occasion of these operations. In general, this behavior is shown to be modified from its instinctive modalities to its intellectual techniques.

The intellectual operations which the aphasic succeeds in performing, whether a question of the direct treatment of things or of deductions established by progressive operations, have little or nothing to do with the symbolic processes of simplification, using algorithms. On the contrary, the operations of which the aphasic is incapable are discursive operations, where these symbolic processes play an essential role. That leads one to think that, if the categorical attitude and the use of words to designate concepts are linked to each other, it is because the possibility of the categorical atti-

tude is assured by the constitution of the system of symbols. Ombredane therefore established a series of different behaviors which will be described as preserved or altered in each individual case; this will be quantified in order to establish correlations with physiological processes.

Ajuriaguerra and Hécaen have devoted a long chapter in the two editions of their book on the cerebral cortex (1949–60) to problems of aphasia, studying them on the clinical, anatomical and theoretical levels.

Hécaen and Angelergues (1965) have attempted a new synthesis of these problems in putting the accent above all on the methods of examination and the typology of aphasic syndromes, and in trying to specify the points brought out by those in discussion, and the directions in which research ought to orient itself ultimately. The necessity of pluridisciplinary studies and the benefits of neurolinguistic research were particularly stressed.

Lord Brain has insisted, as much in his report to the congress of Rome (1961) as in his introduction to the symposium on the *Disorders of language* (1964), on the necessity of a linguistic approach to language disorders. Phonemes, words, and significations are psychological entities and aphasia, which represents the disturbance of the realization of these entities, is only a psychological disorder resulting from an anatomical lesion. A direct correlation cannot be established between lesion and psychological disturbance, for the effect of the lesion is a physical perturbation. We must thus understand the relation between anatomy and physiology, then the one between physiology and psychology. In order to interpret aphasic symptoms in physiological terms, we need a physiology of language based on the data independent of aphasia. To do this, there are three sources available to us: the development of language in the child, phonetics, communication theory.

The language of the young child is not simply a sensori-motor activity, but sensori-moto-sensory, for the infant hears the sound that he produces. Thus a double feedback intervenes, partially auditory and partially proprioceptive. The importance of the guiding role which auditory feedback plays in normal language has been demonstrated by the experiments by Lee and by Black.

Besides the physical base of the motor phoneme, exactly determined thanks to technical progress, other factors, such as its temporal relation to other phonemes, appeared essential in the comprehension of words, a Gestalt of an order superior to that of the phoneme. Finally, the verbal context, or syntax, and the context of interest intervene. This role of syntax in signification involves the physiology of the serial order in the nervous system.

The other form of context which influences the signification of words is the context of interest, that is the attention paid to the objects which surround the speaker and the listener, as well as their ideas and their intentions which constitute the backdrop for the conversation.

Utilizing the concept of schema in the sense retained by Head and Holmes (that is an unconscious, physiological standard of comparison), Brain considers, as a schema

of the phoneme and schema of the word, the physiological organizations placed between the efferent, auditory channels and the afferent, motor channels, thanks to which every phoneme or every word, no matter how it is pronounced, is identified without a conscious comparison with a standard; recourse to the theory of probabilities would make it possible to understand the functioning of these organizations and the way in which they extract the model from among the presented stimuli. According to him, in effect, we have arrived at a stage where the calculus of probabilities, in utilizing phonetic methods and the principles of communication theory, can be applied experimentally to the study of physiological mechanisms incorporated in the functions of schemas, as well as to the study of aphasia.

Conrad (1947, 1948a, 1948b, 1949a, 1954), in a series of publications dealing with the diverse varieties of aphasia studied in great detail, arrives at a comprehensive conception of aphasias in the sense of Gestaltist thought. But he endeavors to introduce a more dynamic element into this conception by viewing the formation of Gestalten in their 'actual genesis,' conducting the process from the formation of the Vorgestalt (preform) to the completed Gestalt. In the VORGESTALT, the physiognomical qualities predominate over the structural qualities: there is a 'collectivization' of the Gestalt by the slightest ground-figure differentiation; the Vorgestalt remains a fluctuating form, with indefinite contours, which is not stabilized and leaves the subject with a feeling of incompletion which corresponds to a reduction of the degree of freedom and provokes a feeling of tension. In short, Conrad reduces aphasia to a disturbance of the formation of Gestalten or of their auditory comprehension. The process of the formation of verbal Gestalten would include two stages: the first would be at the level of inner speech and would consist in putting the 'sense' into verbal form; the second would consist in the realization of kinetic Gestalten. The disorder at the first stage would correspond to Broca's aphasia, the disturbance of the second stage being apraxia. In its reception the same stages would be found, but in inverse order: detachment of auditory Gestalten from their background, resulting in pure verbal deafness, and reception of the auditory Gestalt as the carrier of signification, the disorder of which corresponds to sensory aphasia. As for amnesic aphasia, it is the consequence of a disorder of the 'actual genesis' of words, which, even with voluntary effort does not go beyond the Vorgestalt stage.

A more or less implicit reference to the notion of Finkelnburgs' asymbolia appears in the works of certain German authors. Thus, Panse (1950) sees in man a virtual psychic capacity of forming, fixing and exchanging symbolic signs full of a character of signification. This function preserves its unity while utilizing different sensori-motor systems: auditivo-verbal in normal man, optico-motor in a deaf-mute, and sensitivo-motor in a blind deaf-mute. The language function, utilizing diverse instrumentalities, depends on the activity of diverse cerebral zones, but could not itself be localized; the classic language centers have, in reality, only one function of the gnosic assimilation of verbal, auditory impressions and the articulation of language. Motor aphasia and

expressive agrammatism represent articulo-kineto-apraxic disturbances and verbal deafness, an agnosia.

E. Bay (1960, 1962, 1964) has several times presented a conception of aphasia which, while very close to that which P. Marie presented in 1906, draws on Goldstein's theses. His repudiation of the sensori-motor dichotomy is formal and the unity of aphasia is affirmed; the types that we find again in clinical practice are due to the adjunction of non-linguistic phenomena to language disturbance, always univocal, which forms the nucleus of the constellation. In order to avoid the influence of theoretical preoccupations in the analysis of observed facts and their grouping, he submits eighty aphasics to quantitative tests, considering verbal factors as well as non-verbal factors, which permits him to establish four profiles of homogeneous performances.

1. *Cortical dysarthria.* The expressive disorders are predominant, if not the only ones present; tongue movements are quite perturbed and there is an apraxia of the articulatory muscles. It does not involve an aphasic disturbance, but rather a disorder of articulation analogous to a 'spastic paresis of the members'. Cortical dysarthria can be pure (the pure, sub-cortical, motor aphasia of the classics) or exist in combination with true aphasia (cortical, motor aphasia).

2. *'Amnesic' aphasia.* This involves disorders in reading, in repetition of a short story, in naming and pointing to objects on verbal command.

3. *Sensory aphasia.* The profile of results obtained by these subjects is distinguished from the preceding ones only by a very low score in repetition (which suggests an additional disturbance of audition), but the clinical aspect is clearly separate from them: logorrhea, abundance of paraphasias and grave deficits in comprehension. The difference between amnesic aphasia and sensory aphasia is not, according to the author, of a linguistic order; these are not two distinct forms of aphasia: the first is pure, veritable aphasia, while to this pure aphasia is added, in sensory aphasia, a general mental disorder (anosognosia and euphoria) and, in some cases, an auditory disturbance.

4. The last group corresponds to patients presenting a true, moderate aphasic deficit, but great difficulties in repeating a short story and in tests of enumeration and association. To the disorder of language can be added another general, intellectual disorder, a 'lack of ideas'.

Aphasia is thus one according to Bay, and corresponds to classic amnesic aphasia, but the latter, in turn, is not itself a language disorder; it is a disturbance of conceptual thought (the faculty of establishing propositions). Such a conception has met with lively opposition on the part of aphasiologists in the symposium on *Disorders of language* (ed. de Reuck and O'Connor) which met in London in 1963.

The history of the birth of research work on aphasia has served as subject of several studies. We have already cited the important historic part of Ombredane's book; Critchley (1964a) has been interested in the controversies between G. Dax and Broca over the priority of the discovery of the hemispheric lateralization of language.

H. Hécaen and J. Dubois (1969) have collected the essential texts which mark the birth of language neuropsychology, from Bouillaud's first works to the historical communications of P. Broca.

After having thus revealed the main lines of the evolution of ideas on the problems of aphasiology, and having indicated the more comprehensive works which have appeared on this question, we will present the state of research in this domain under four large rubrics: (1) Symptomatology and particular forms of aphasias; (2) Disorders of the cognitive functions and aphasia; (3) Anatomical problems; (4) The neurolinguistic approach.

I. SYMPTOMATOLOGY AND PARTICULAR FORMS OF APHASIAS

Attempts at the quantitative measure of language, continuing the attempts made by Head or Weisenburg and McBride, have been presented in different countries. We will call attention to the battery of tests made by Bay (1960), which makes it possible to obtain a profile of the different aphasic disorders.

G. Rochford and Williams (1965) have suggested comparing quantitatively the dysfunctions of language by equalizing the difficulties for the different tests (expression, comprehension, reading, writing) in utilizing the norms of language acquisition by the child. With the battery established on these bases it would be possible to compare: (1) the verbal performances of one patient to another; (2) the disorders of one modality of language with those of other modalities; (3) the subject's capacities at different periods.

In 1962, De Renzi and Vignolo proposed a test designed to measure the degree of verbal comprehension of aphasics: the Token Test. The subject must manipulate tokens of different form, size and color, following orders given verbally and according to an order of increasing complexity, excluding all redundancy of the message. This test has shown itself to be sensible even in the case of light aphasias and those classified as expressive. The scoring of it is easy (one error for an incorrect or missing response to each element of information).

The normative data for this test was furnished subsequently by Orgass and Poeck (1966). For normal adult subjects there was no influence of age, neither should sex be considered. The socio-cultural level of the subject influences performance on the test, but not significantly. There is no significant difference between the results of the control subjects and those of subjects suffering from a cerebral lesion, but without aphasia. The test shows itself finally, in this study, greatly efficacious in the discrimination between aphasic subjects of no matter what type, and non-aphasics.

Pure Motor Aphasia

The discussion by P. Marie of the reality of anarthria continued into the period be-

tween the World Wars. Ch. Foix (1928), as we have seen, insisted on the presence of a dysarthric element in order to distinguish aphasia, while H. Head (1926) formally rejected anarthria and replaced it with the verbal aphasia in which there always existed, according to him, a disturbance of verbalization.

Alajouanine, Ombredane and Durand (1939) have studied the expressive disorders of aphasics by recordings which reveal the articulatory mechanism. Thanks to this method, they have been able to discern three aspects of the expressive disorder: a paretic aspect, involving above all the beginning of emission; a dystonic aspect, articulatory movements exaggerated in their force and duration, elocution dominated by hypertonia, postural rigidity and synkineses; a dyspraxic aspect (bucco-facial apraxia). These authors insist on the different levels which one can determine in expressive disorders, from elementary motor to ideo-motor. They underline equally the analogies of these phonetic perturbations with the manifestations of child language. In order to affirm this character of a return to the elementary stages of elocution, they name this group of expressive perturbations the syndrome of phonetic disintegration. These authors also underline the fact that 'there is no correspondance between these anomalies of the structure of written words and the phonetic mutations which appear in their elocution'.

Again taking up the study of this problem in 1960 with F. Lhermitte, Alajouanine establishes the existence of pure anarthria such as P. Marie conceived it, either as a primary disorder, or as a sequel to Broca's aphasia. At the initial stage of anarthria, bucco-facial apraxia would be constant, but would subsequently regress much more rapidly than arthric disturbances.

Nathan (1947) has emphasized the existence of apraxic dysarthria when a lesion of the motor cortex, generator, according to him, of facial apraxia, extends towards the white, subjacent zone (P. Marie's Quadrilatere).

Bay's position is very close to that of P. Marie. Pure motor aphasia consists for him in a motor deficiency of the articulatory muscles, analogous to a spastic paresis of the members; it involves a cortical dysarthria which a recording of the non-articulatory movements of the muscles of the tongue would reveal.

Sensory Aphasia and Jargonaphasia

Alajouanine, Sabouraud and Ribaucourt (1962) distinguished three types of aphasic jargons: an undifferentiated jargon close (only in its structure) to stereotypy, made of phonemes with neither signification nor grammatical arrangement; an asemantic jargon composed of neologisms which cause it to resemble a foreign language because of a semblance of grammatical organization; a paraphasic jargon due to the frequency of word substitutions. This language disorder is very often unrecognized in euphoria and depressed patients. The authors also saw it as an anosognosic disintegration of the semantic values of language.

Taking this question up again in 1964, Alajouanine et al. oppose the jargons composed uniquely of phonemic paraphasias, of which they show the link with a disturbance of the patterns of auditory origin which underlie verbal expression, and the jargons composed of semantic paraphasias which cause no trouble to the sensorimotor organization; the disturbance involved here is at a level superior to the audiophonetic and visuo-graphic mechanisms, intermediary between the sounds or images of the spoken or written word, on one side, and the consciousness of signification on the other.

Kinsbourne and Warrington (1963), in accord with Alajouanine, note the frequency of logorrhea, euphoria and the negation of the disorder in jargonaphasic patients. They insist equally on the fact that jargonaphasia can be encountered with a somewhat intact verbal reception and/or with a preserved 'general intelligence'.

Observations of PURE VERBAL DEAFNESS always deserve to be recorded, considering their rarity, which is the reason why some continue to doubt the reality of such a pure form. One will cite, therefore, besides the classic anatomoclinical observations by Shuster and Taterka (1926), M. Reinhold (1950), Klein and Harper (1956), Mahoudeau et al. (1957). In Klein and Harper's investigation, the description of the disorder by the patient himself, in a second phase, would lead one to assert that speech perception, in the phase of total verbal deafness, is accomplished without spatial or temporal order. Let us add that for the patient, the signification of noises, the recollection of melodies and even the distinguishing of a particular accent of the observer were conserved, but the perception of rhythms was quite disturbed.

In the observations made by Klein and Harper (1956), and Mahoudeau et al. (1957), the audiometric findings only revealed a discrete hypoacusis of perception, disorders appearing insufficient to explain the verbal agnosia and the selectivity of the disease. In regards to this, the studies of audition of aphasics ought to be cited. For example, Alajouanine, Aubry and Pialoux (1955) have determined an augmentation of threshold for increased frequencies in motor as well as sensory aphasics, while Schubert and Panse (1953) have observed in sensory aphasics an augmentation of auditory fatigue after particular efforts, and a diminution of concentration and acoustic apperceptibility.

Conduction Aphasia (Leitungsaphasie)

Since its theoretic affirmation by Wernicke, this form has given rise to a certain number of publications which assure its reality as a clinical phenomenon. The discussions have dealt with the interpretation to be given it, some still willing to see it only as a residual syndrome of a sensory aphasia, while Goldstein, on the contrary, has always insisted on the original constellation of symptoms that it constitutes. It should be called, according to him, central aphasia.

After a careful analysis of his observations, Conrad (1948b) admits that it involves a fixation of language at its elementary form, at the 'Vorgestalt'. Conduction aphasia

is thus conceived as a loss of the possibility of structuring thought into verbal form. Close to Goldstein, he affirms a disorder and temporal seriation, an impossibility of 'simultaneizing the successive'.

We shall return to this form of aphasic disorder later, in the last part of this report.

Disorders of Written Language

These disorders have been studied under their two aspects, agraphia and alexia, by Leischner (1957) in a comprehensive manner because for him it is impossible to utilize the diverse classifications which have been proposed. In effect, his clinical material only revealed to him agraphias associated with an alexia and even in a constant manner to other language disorders. A secondary cerebral function, written language does not possess an area exclusive to it, nor an organ of execution. Disorder of written language involves only the impossibility of apprehending any isolated symbol and difficulty in passing from one symbolic category to another; it is an asymbolia in the manner of Finkelnburg. The written language function possesses only a relative localization at the level of the lower parietal lobe of the dominant hemisphere: the lesion of this zone determines an asymbolia of the language of signs.

On the contrary, Hoff, Gloning and Gloning (1954) distinguish two anatomoclinical forms of alexia, from the framework of which they exclude alexias, sequels of sensory aphasia. The first form is parietal alexia, which is an aphasic alexia, accompanied by agraphia, while visual gnosias remain unmodified. The patient is unable to assemble letters into a word and commits numerous paralexias, as well with letters as with words. The second form is alexia of the lingual lobule, or pure verbal blindness with agnosia of colors — and more rarely of objects. The letters are identified individually, but the assemblage into words is impossible. Sometimes alexia will be literal. There is no agraphia.

The reality of a pure alexia, that is without agraphia, stems from the works of Hécaen, Ajuriaguerra and David (1952) who have studied reading disorders and their regression, which can be almost complete after a left occipital lobectomy, and from the works of Aljouanine, F. Lhermitte and B. de Ribaucourt (1960), who distinguish among their cases between agnosic alexias (alexias without agraphia) and aphasic alexias. We will return to the study of these disorders conducted according to linguistic methods.

Particular Forms

Besides the anatomical factors, whose role cannot be underestimated in the production of clinical manifestations and in their degree of purity and complexity, there are others which are dependent more specifically on the subject or on the cultural and linguistic milieu in which he belongs. In the extreme, these factors will play a role

such that they will bring about the occurrence of particular forms in which the lesional topography will no longer be, or at least will be much less determinant in the pathological aspects of verbal behavior. Among these special forms, child aphasia, aphasia in polyglots, aphasia in left-handed persons, and aphasia in deaf-mutes have stimulated important works, several of which have been realized in Western Europe.

Aphasia in Children

Guttman (1942) affirms that aphasia developed in the child is as frequent as cases in the adult, and he reports 16 out of 30 cases of hemispheric lesions as being in children less than 14 years old. He finds in 14 cases a lack of spontaneous language, a reluctance to speak, a poverty of language, telegraphic style, hesitations and dysarthria. He observes in two cases a disturbance of verbal, auditory and visual comprehension, a disturbance which he attributes to a particularly widespread lesion. He considers speech inhibitions as characteristic of aphasics under ten years of age although they can be found elsewhere. Motor aphasia appears to him to offer a favorable prognosis, recuperation being complete in four weeks, in benign cases; on the other hand, if after four weeks some signs of aphasia still persist, he is more reserved about the prognosis. The presence of both sensory and motor aphasia at the same time is always, according to him, of a more reserved prognosis.

Two recent studies make it possible to confirm in general the conclusions of this work, and to clarify certain characteristics of aphasia in children.

Alajouanine and Lhermitte (1965) published a study dealing with 32 cases of child aphasia. They stress the frequent reduction of oral, written and gesticulative, expressive activities, on a dysarthria and a severe hemiplegia, on the reduction of verbal stock and the simplification of syntax. On the other hand, they find neither logorrhea, verbal stereotypies, nor perserverations. Verbal understanding is disturbed in one third of the cases: in four of those cases, the disorder is severe, which goes against previous findings. Writing disturbances are constant and reading is impaired in a little over one-half of the cases. They note the return to normal language in 24 of the children with, nevertheless, persistence of a certain degree of writing disorder in 14 of them.

A study by Collignon, Hécaen and Angelergues (1968) confirms the disturbance of verbal comprehension in the first stages of these child aphasias, and insists on the presence of verbal stereotypy and amnesic aphasia. In addition, it is established in this study that the aphasic aspect in the child can never be assimilated to one of those described clinically in the adult. The authors underline the relative rapidity of recuperation in their case, but also the possibility of definitive aphasic, apraxic and agnosic sequels in the presence of massive and probably bilateral lesions.

These particular characteristics of child aphasia are evidently of great importance in the comprehension of cerebral dominance and of its installation in the course of development and maturation.

It is important to note that the language disorders display certain similarities with

those supervening among left-handed persons (predominance of expressive forms, good possibilities of recuperation, relative frequency of right lesions).

Aphasia in Left-Handed Persons

Since Broca, it was held that the representation of language lies, in the left-handed person, in the right hemisphere, and it was not until after the Second World War, with the exception of a work by Chescher in 1936, that this dogma was revised.

In Europe, studies by Conrad (1949b), Zangwill (1960), Hécaen and Ajuriaguerra (1963), demonstrating that lesions determining aphasia can lie as well, even primarily, in the left hemisphere as in the right, have proved that the dominance of one hemisphere is far from being as strict in these subjects as in right-handed persons. Research conducted parallel to these, in other countries, confirm these results, some authors going so far as to proclaim abusively the constancy of left lesions in left-handed aphasics.

Critchley (1954), on the one hand, Ettlinger, Jackson and Zangwill (1956), on the other, have studied more generally the disorders of symbolic functions in series of left-handed or ambidextrous persons with a lateralized, hemispheric lesion: of Critchley's 14 cases, dysphasia is present in only 7 of the 12 subjects with a lesion of the right hemisphere. In the Ettlinger series, dysphasia is totally absent in only one of the 8 left lesions. Dysgraphia is present in 6 cases. A marked, but transitory dysphasia was revealed in one of the two subjects with a right lesion.

According to Hoff's observations (1961), lesions in right-handed persons were situated in the left hemisphere in 99% of the cases, while, in left-handed persons, the proportion of left lesions was only 70%.

Concerning unilateral, traumatic lesions incurred in war in left-handed persons, Russel and Espir (1961) obtained the following facts: for left lesions, aphasia is encountered in 37% of cases (9 out of 24); for right lesions, in 17% of cases (4 out of 24).

There appeared as well in these diverse works, the notion of a more rapid regression and of a greater recuperation of language disorders in left-handed than in right-handed persons. Only Russel and Espir do not admit the conclusions. Studies more especially centered on the possibilities of recuperation in left-handed persons show however, that regression of language disorders is more rapid and more important not only in confirmed left-handed persons, but also in subjects presenting some slight indications of left-handedness or a familial stock of left-handedness (Subirana 1952).

The study of paroxystic dysphasias also reveals differences according to whether the subject is right- or left-handed. Hécaen and Piercy (1956), studying 26 cases of paroxystic dysphasia with clearly lateralized epileptogenetic source, state that, in a statistically significant way, paroxystic dysphasia of the expressive type occurs more frequently in left- than right-handed persons, no matter which hemisphere is injured. (The figures published by Russel and Espir (1961) seem to confirm these findings). In right-handed persons, the frequency of these disorders increases if only the lesions

of the left hemisphere are considered. Paroxystic dysphasia of the receptive type is, on the other hand, rare in left-handed persons. In a later study devoted to epileptic disorders of language, and not especially to the problem of cerebral dominance, Hécaen and Angelergues (1960) have again confirmed this greater frequency of paroxystic expressive disorders as well as the greater distribution of hemispheric, lesional lateralizations in left-handed persons. But this analysis reveals a percentage of paroxystic, verbal deafness almost as important in left- as in right-handed persons.

The study of perceptive asymmetries in normal right- and left-handed subjects by means of biaural hearing tests, and the results of the WADA test, showing the relative frequency of language disorders determined by the introcarotid injection of either side in left-handed epileptics (B. Milner), provide arguments for the hypothesis of a bilateral representation of language in left-handed persons, a hypothesis advanced as a result of anatomoclinical work.

Several times since 1956, Hécaen and Ajuriaguerra have presented observations relative to left-handed subjects suffering from a lateralized, retrorolandic, hemispheric lesion. In 1963, on the basis of 59 observations (37 left lesions and 22 right lesions), of which 42 were verified surgically or anatomically, and on their comparison with an important series of retrorolandic hemispheric lesions in right-handed persons (173 left lesions and 136 right lesions), they have tried to draw some conclusions as to the respective frequency of various language disorders according to the hemisphere injured in left-handed persons, and on the differences between the syndromes observed in these subjects and those encountered in right-handed persons.

First, their findings confirm the frequency of language disorders in the case of left lesion in left-handed persons, and the milder intensity of aphasic symptoms in these subjects no matter what side is viewed (in particular the rarity or the clear tendency toward regression of disorders of comprehension). The fact is emphasized that alexia, frequent in cases of left lesion, appears exceptional for lesions of the other hemisphere. Thus the assertions of most authors about the smallest intensity of language disorders and their greatest recuperation are justified, as are their statements about their often paroxystic or transitory characteristics in subjects of mixed manual preference. Even if the left lesions are more capable of determining these disorders, it is impossible to subscribe to the radical conclusions of those who deny the possibility of aphasic disorders by a right lesion in left-handed persons.

The statistical study of the frequency of the different aspects of language disorder, according to the hemisphere injured in these subjects, makes it possible to determine the frequency of language disorders of the motor type in one or the other groups (the permanent disorders being, however, more frequent for left lesions), the obvious predominance of verbal amnesia and alexia in cases of left lesions, and the slight predominance (elsewhere not statistically significant) of dysgraphias in cases of left lesions. Verbal deafness is rare in the two groups; however, its frequency is significantly greater in cases presenting a lesion of the left hemisphere.

If one compares the frequencies of language disturbances arising from a left lesion in the right-handed person with those of the same disorders in the left-handed person, either with a left or right lesion, one should obtain certain facts:

1. No matter which hemisphere is injured in the left-handed person, the expressive disorders have a greater frequency, in a statistically significant way, than that which is obtained in the case of a left lesion in a right-handed person. However, if permanent cases only are considered, the percentages are equal between left-handed persons with left lesion (24, 32 per 100) and right-handed persons with left lesion (26, 38 per 100), while in left-handed persons with right lesion, the proportion drops to 9.09 per 100;

2. Disorders of comprehension are rare, whether to the right or left, in the left-handed person, and the difference between the frequency of these disorders in right- and left-handed persons is statistically significant in the case of left lesions and to the advantage of the first; nevertheless, since the appearance of this work, three cases of left-handed subjects with considerable disorders of comprehension have been observed, but the recuperation of disorders has been particularly rapid and important (Hécaen 1969);

3. Amnesic aphasia and agraphia are as frequent in left-handed persons as in the right-handed person with left lesions;

4. Alexia reveals a significant frequency in left-handed persons with left lesion in relation to right-handed persons with a lesion of the same hemisphere;

5. In the case of right lesions, it is necessary to note the rarity of amnesic aphasia and alexia, but agraphias are relatively frequent, and the difference in the frequency of agraphias with right lesion in the left- and in the right-handed person is not statistically significant.

These comparisons have been continued with the study of the frequency of different praxic and gnosic disorders in left-handed persons in contrast with right-handed persons, and according to the injured hemisphere in left-handed persons. They make it possible to arrive at the following schematization:

1. The right, posterior, hemispheric syndrome in the left-handed person is distinct from that in the right-handed person by the presence of paroxystic expressive disorders of language and bilateral disturbances of the somatognosia;

2. The left posterior hemispheric syndrome in the left-handed person is differentiated from that in the right-handed person by a decrease in verbal comprehension disorders, a greater frequency of bilateral asomatognosia and object agnosias, the presence of elements of the right hemispheric syndrome; spatial agnosias and apraxia for dressing;

3. In the left-handed person, the only significant difference between right and left syndrome lies in the frequency of hemiasomatognosia resulting from right lesions and permanent language disorders characteristic of left lesions.

Thus, for left-handed persons it can be maintained that the left hemisphere has kept its preeminence in the language function, without involving an absolute rule, but it is to be remembered that the recuperation of language disorders is more rapid and more

complete in left-handed persons than in right-handed persons, that their intensity is less in the former, and, finally, that paroxystic dysphasias are more frequent in left-handed persons, no matter which hemisphere is the cause. All these facts, joined to the results of the WADA test, are arguments in favor of a representation of language more evenly distributed between the two hemispheres.

On the other hand, the dissimilarity of aphasic aspects in right- and left-handed persons suggests the possibility of a difference between these two groups in regards to the extension of language representation to a single hemisphere and in regards to the degree of cerebral focalization of the sensory language mechanisms on the one side, and motor mechanisms on the other.

Aphasia in Polyglots

Since the study made by Pitres (1895), in which he emphasizes the rule which governs the recuperation of language disorders in the aphasic, numerous exceptions have been presented to the rule which bears his name.

Thus Minkowski (1963), who had studied several times the problem of the behavior of the aphasic who speaks one or several languages and a dialect, has taken up again, in a more profound manner, the whole problem of language disorders and their mode of recuperation in polyglots. While admitting the validity of Pitres' rule, he shows, according to cases which he has personally studied and those which are the subject of various publications, that it is open to numerous exceptions. He insists on the complexity of the notion of 'the most fluent language' at the moment when the patient is afflicted; this conception involves, in effect, a psychological and affective background. For him, the exceptions to Pitre's rule occur for two sorts of reasons: on the one hand, if, at the beginning of aphasia, the affective pressure deeply rooted in the instinctive life of the subject imposes the preeminence of one language at the expense of the one he is most accustomed to and in spite of its lesser value as a means of communication; on the other hand if there are difficulties in the reactivation and recovery of the most fluent language, due to the way it has been learned and to its particular linguistic structure, or due to the localization and nature of the lesion. He thus underlines that, in those personal observations of his which deviate from Pitre's rule, there intervene either visual factors (the subject having learned a second language, especially by reading) affective factors (the desire to speak the language of cultivated people) or social factors (dialect, language of childhood, being out of touch with the profession and personal life of the subject for many years).

L'hermitte et al. (1966) have again taken up this question, in connection with the observation of eight polyglot patients, taking into consideration the recent work done by linguists and psycholinguists on bilingualism. They arrive at the conclusion that no difference is revealed in the typology of disorganizations according to the language spoken either synchronically, at the moment of illness, or in the course of recuperation, the kinds of deficit remaining the same and, further, that no anatomical

factor, the role of which had been maintained by Pötzl (1930), by Stengel and Zelmanowic (1933) and by Leischner (1948), appeared to intervene in the mode of recuperation of the diverse languages. (We underline, in regards to this, the fact that I. and K. Gloning (1965) advanced the hypothesis of a less marked hemispheric dominance in polyglots). The permanence has been established of certain types of deficits relative to even quite diverse languages. Nevertheless, one notices variations in the form and the intensity of interferences between the diverse systems: in effect, if, in the case of expressive aphasia, the autonomy of the linguistic systems remains the same, as for the normal subject, the interferences are more intense and more lasting than if it were a question of sensory aphasia, to the point of giving the impression that the two systems only form a single one (telescopages and substitutions in syntax as in the lexicon); the interferences occur in the direction of the oldest to the language the least well known by the subject. L'hermitte et al. insist on the fact that, no matter what type of bilingualism, coordinated as in the case of their patients or composed like, for example, Lambert and Fillenbaum's (1959) aphasics of Montreal, the general characteristics of disturbances and even the mode of recuperation remain relatively independent of psycho-social and affective conditions and of the forms of linguistic systems.

Aphasia in Deaf-Mutes

In spite of their rarity, observations of deaf-mutes suffering from aphasia are of great theoretical interest, especially when it has been possible to specify the location of the lesion, the systems of education used by patients, the age at which deafness occurred (before or after the beginning of language acquisition). The study by Critchley (1938) deals with a deaf-mute who expressed himself with his hands, could read lips, and possessed an articulated language. After an ictus with right hemiplegia, he lost the oral language which he had acquired, became agraphic, could neither communicate with his hands, read lips, nor decode sign language. In spite of a certain amount of recuperation, expression remained dysarthric and agrammatical, and the manual language was even more disturbed.

Leischner's (1948) study deals with a sixty-four year old deaf-mute who, following an ictus (lesion of vascular origin of the left supramarginalis gyrus, verified by autopsy), displayed disturbances of expression and comprehension. The oral language, like sign language, was quite altered; the sign language was better recuperated. His comprehension was equally altered since, if he was addressed by means of signs, he used some incorrect words, although he formed certain ideational relations to the question. The recognition of written words was preserved, though he still used some inappropriate words. In writing, this polyglot patient mixed the two languages that he knew. For Leischner, it is a question of a generalized disorder of the forms of symbolic expression, of an asymbolia of sign language. He underlines, besides this, the difficulties in intersymbolic relations, in the coupling of these modes of expression,

difficulties which would result from damage to the center which regulates all the modes of expression (gyrus supramarginalis).

No matter what the lesional localization at the level of the left hemisphere, it is necessary to point out, in the diverse cases published, that these subjects presented only apraxia to communicate and no other types. Critchley spoke of dactylological apraxia but with a disturbance of inner speech. We will underline, then, this dissociation between the impairment of this system of substitutive gestures in oral language and the preservation of the system of symbolic or descriptive gestures.

II. APHASIA AND DISORDERS OF THE COGNITIVE FUNCTIONS

At the present time, it seems that the research on the relation between disorders of the intelligence and those of language are oriented towards a systematic and methodical analysis of non-verbal performances of aphasics. The general principle, then, is to submit the aphasic subjects to tests as 'non-verbal' as possible, and to compare the results with those which are obtained by administering the same tests to normal subjects or those suffering from a cerebral lesion which does not involve a language disorder.

The development of this research has elsewhere been greatly facilitated by new conceptions of cerebral dominance. The clinical discovery of functional disorders depending on right hemispheric lesions has given rise to comparative psychometrical studies of groups of subjects suffering from right and left lesions, with or without aphasia.

These works, carried out at first almost solely with the Wechsler-Bellevue subtests, confirmed that deterioration was able to present itself without a unifying character: for subjects with left lesions, a drop in verbal scores was recorded, while for subjects with right lesions, deficits in the tests of visuo-spatial performance were found. Thus it was demonstrated by McFie and Piercy (1952b) that non-aphasic patients could prove to be very clearly inferior to aphasics on non-verbal tests.

On the other hand, a series of research projects with tests of abstraction, either with the Weigl Sorting Test, or with tests derived from it, confirm the connection between the defects on this type of test and left lesions (McFie and Piercy 1952a; De Renzi, Faglioni, Savoiardo and Vignolo 1966.)

After having thus admitted this diversity of defects according to the hemisphere, the problem of the role of aphasia in the defects recorded in the presence of left lesions ought to be posed. McFie and Piercy, establishing a deficiency in response to the Weigl Sorting Test in the presence of left lesions, note that it was independent of the presence or absence of aphasia. On the other hand, with a modified version of the Weigl test, permitting a classification according to five categories, De Renzi et al. (1966) established that this test is especially sensitive, not to a certain cerebral injury, but to the presence of aphasia.

Nevertheless, a certain number of works do not confirm this relationship between

aphasia and poor response to the test of abstraction, while other studies (S. Weinstein and H. L. Teuber) tend to put the emphasis on the role of the lesion of a definite cerebral area of the left hemisphere rather than on the role of aphasia alone. In this sense, the observations made by Zangwill (1964) on the results obtained by aphasics on the Raven's Progressive Matrices test are interesting. In effect, he states that even in extreme cases of almost total motor aphasia, complete jargonaphasia or very severe amnesic aphasia, the results can be relatively good. On the other hand, a deficiency in the performances obtained on this test is only encountered when there are disturbances of constructive activity, and, an important fact, this deficit exists when these disorders are associated with aphasia, as well as when they are found isolated, as with lesions of the non-dominant hemisphere.

The presence of apraxia also appeared as an important variable according to results obtained by Tissot, Lhermitte and Ducarne (1963), since most aphasics have a normal IQ performance, or one superior on the Wechsler-Bellevue scale, and when this IQ is less than 80, 65% of these subjects are apraxic; in the general group of aphasics, the proportion of apraxia is only 15%.

Taking into account the results obtained by Teuber, which demonstrated that a deficit, as non-verbal as possible, appeared to be linked to the presence of aphasia, and bringing them together with those obtained with their modified version of the Weigl Sorting, De Renzi et al. (1966) confirmed a deficit of 'abstract thought' in aphasics. They are not, however, in complete agreement with Goldstein. In effect, there is a significant correlation between the scores on the Weigl test and those on a test of auditory comprehension, but not with the verbal naming scores. The deficit of abstraction aptitude, as revealed by their test, is connected with the presence of aphasia and involves either damage to inner speech or a lesion of the same left cerebral area which underlies linguistic activities but which would also underlie intellectual activities of a symbolic nature.

However, the fact that there were scores for certain of their sensory aphasics which were higher than the control group's scores, leaves some doubt about one necessary relation between the disorder said to be of the abstract attitude and the disorder of the linguistic activity or with the same lesional center. In order to know if the differences in the extension of the lesion could give an account of this, without assuming the role of the effect of mass (that the Italian authors try to exclude in taking into account the visual reaction time taken as a criterion of the severity of the cerebral damage), it would be necessary to be sure of the exact location of the lesion which, while affecting the Wernicke zone, is no less susceptible of extending into adjacent regions, without this extension necessarily signifying an extreme massiveness. It is for this reason that one hesitates when the Italian authors compare the disorder of abstract thought with other deficits also statistically correlated to the presence of sensory aphasia (deficiency in the handling of objects, representing an inability to associate the appropriate gesture with the object presented, difficulties in associating drawings with the colors or sounds which correspond to them), in order to prove that it involves manifestations of a basic

disturbance inherent in aphasia: the inability to associate different aspects of the same concept.

In the absence of precise, anatomical verification, it is perhaps dangerous to place one's reliance on aphasia considered as a single entity. Many authors have for a long time underlined the almost individual character of the relations between intellectual and aphasic disturbances.

These variations from one subject to another are underlined in the study by Tissot, Lhermitte and Ducarne (1963). With Piaget's operational tests (organization of space and of time; representation of the horizontal level; elementary logic; combination of chemical components in order to obtain a given color), the heterogeneity of the results for aphasics appeared as the first characteristic; no correlation was found between the level of 'IQ performance', the degree of aphasia and the results of these tests.

We note, however, that the only correlation recorded by these authors is between the presence of semantic paraphasias and the presence of very low results on all these tests. Thus, when the 'process of semantization' is disturbed by aphasia, there will be non-linguistic disturbances which will involve a regression to operational levels such as found in the child's stages of development. This deficiency would be very close to the fundamental disorder described by Goldstein, or to the conceptual thought uncovered by Bay. But the authors insist on the fact that this general disorder is encountered only in the case of aphasia of temporal origin, while in even very severe motor aphasia, conceptual thought can function normally; their findings recall those of De Renzi et al. (1966).

The results of these diverse research projects, although not specifically directed according to the type of aphasia encountered, allow us to perceive the different relations between general intellectual disorder and linguistic disturbance according to its typology.

The correlation of disorders with the deficit of auditory comprehension or with semantic paraphasias implies that Wernicke's aphasia is above all the cause, while De Renzi does not find a relation between amnesic aphasia and these general deficits.

If one allows that Wernicke's aphasia corresponds more to a syndromic complex than to an univocal type, that amnesic aphasia corresponds to the disorganization of diverse mechanisms, important discordance between individual cases can be expected to appear. Certain aspects of linguistic disturbance would then already indicate an 'intellectual' defect or, inversely, one would witness only a linguistic echo of the more general disturbance. It would appear from this that it is difficult to utilize long series for studies of this sort, due to the necessity of specifying the topography of the lesion and the typological variety at fault.

There remains however, the problem of an intellectual disturbance inherent in the disorder of linguistic activity. For example, Zangwill's research (1964), of which we have seen the position vis-à-vis the relations between the intellectual deficit (judged by Raven's P.M) and aphasia, leads him to state that there are, even in subjects presenting minimal language disorders, disorders of the explanation of idiomatic expressions

and of proverbs, while comprehension is fully preserved. If the deficiency in comprehension is encountered only in the case temporal damage, deficiencies in explanation can be associated with it, but not necessarily, as in the case recalled by Zangwill, where, in spite of almost complete verbal deafness, proverbs presented in writing were very well explained orally.

The problem of a specific, non-verbal deficit in aphasias is certainly not solved, and the difficulties in resolving it remain considerable. It would appear, however, that the path opened since 1935 by Weisenburg and McBride has made it possible to situate it on concrete foundations, and to partially answer certain questions.

The Language of Dements

The study of the relations between intelligence and language can be conducted just as well by the study of language in dements showing, in principle, no signs of aphasia. Few studies have been devoted to this type of analysis, except for the work of Seglas (1892), who only gives some brief summaries of language disorders in dements, and the distinctions proposed by Goldstein (1948) between the lack of words in dements and veritable amnesic aphasia.

After Stengel and Goldstein, Critchley (1964b) has given himself the task of outlining its specifications. The first characteristic is the incoherence of expressions, often rendering the communication between observers and patients impossible. After Seglas, Critchley qualifies it with dyslogia, a term which covers not only the inadequateness of the expression's logical connections, but also that of the responses to the situation, the strange associations between the words of the discourse, suggesting a total inaptitude in adaptation to the conditions of a new communication. This lack of organization may result in a statement composed of a simple packet of words. The second identifying characteristic is echolalia, the reflex automatism of responses, which gives the conversation its empty and stereotyped character. The pseudo-coherence of certain discourses does not succeed in masking the fact that they are speeches without a message. The third characteristic is the poverty of lexical stock: the reduction of words utilized effectively in discourse, deficit of specific terms in comparison with vague, generic terms (thingamajig, thing) which become the normal substitutes for any term which amnesic difficulties no longer make it possible to recall: paraphrase substitutes and commentaries on the responses expected in the course of tests of denomination. The fourth characteristic is the absence of real control of utterances: the satisfaction that the dement finds in regards to his responses reveals itself, at the same time, as the total absence of painful anxiety in the vain search for the specific term. The fifth characteristic is the progressive increase in the disorder of the utterance. Finally, the sixth characteristic resides in the difficulty of comprehension.

Critchley insists on the difference, which he judges to be solely quantitative, between these disorders and the productions of aphasics, as far as perseverations, and

the inability to produce veritable propositions are concerned; he underlines the frequency of the forms associating dyslogias and dysphasias. On the contrary, Stengel (1964) has insisted, following Goldstein, on the differences presented by disorders of verbal naming in aphasics and in dements. The latter improvise audaciously on the impulse of the moment and thus form neologisms in which the effects of contamination or perseveration are seen. Occasionally, references to personal problems are revealed in these new words or in these approximate responses.

Delay, Pichot, Dursap and Perse (1950–55) opposed two groups of dements, the one with latent aphasia, the other without dysphasic disorders. These two groups did not differ significantly on the Progressive Matrix 38 test, on the Weigl color-form classifications, and on the Kohs cube, but the results of the arteriopathic mentally ill on vocabulary tests were inferior to those of simple, senile mental patients.

Haag and Brabant (1963) have studied, on fifteen cases of senile dementia for which the intellectual deterioration was expressed by an efficiency quotient and by the Benton test, the realizations of language according to tests of word and nonsense syllable repetition, of naming and designation of images: good results for the repetition, and the form of responses to naming, often substituting a generic term for the one asked for, would lead the authors to assert the conservation of handling the formal elements of language and the loss of categorical attitude.

L. Irigaray (1967, 1968) studying a group of forty simple dements and dements with aphasia, and using a group of twenty senile patients as a control, uncovers from the results obtained on the tests, and from the analysis of spontaneous language conducted according to linguistic methods, a group of characteristics which puts in the foreground the conservation of the model of competence, basic syntagmatic models and diverse types of transformational models, but a disturbance of semantic interpretation (to the point of its destruction). The morphophonological rules only present disturbances in their realization when dementia is accompanied by more or less marked aphasia. On the other hand, there are obvious disturbances at the level of the rules of discourse, consisting of the various types of logical contradiction and of diffusiveness after a term of the preceding utterance. Inertia and perseveration, manifest in all the tests, are present at all levels of the themes of the discourse, in sentence schemas and in vocabulary terms. The behavioral reactions formed by the refusal to respond to instructions, commentaries most often inferred from the situation or the experience of the patient, are accompanied by a lack of vigilance and a deficit of amnesic capabilities. The quantitative study of errors shows, in the exercise of the repetition of words and nonsense syllables, that the latter are more easily interpreted by words of the language as the intellectual deterioration is greater (incapacity for metalinguistic exercises), and that the errors (above all of the perseverative type) are quantitatively different from those of aphasics, and that they increase in the presence of aphasia. In the production of sentences, the difficulties increase as a function of the necessity of emitting a relatively induced message: the inability to put the diverse words of the instruction into the same sentence occurs as soon as the deterioration is severe, the

commentary being substituted for the execution of the task in the most severe cases. The tests of transformation show the pregnancy of syntagmatic constraints which replace paradigmatic choices, the imprecision of transformations to be effected being accompanied with signs of inertia. In short, demential disturbances can be analyzed in a comprehensive manner as a profound modification of the aptitude of the subject in speaking about his utterance and the situation. There is a close bond between the disturbances noted at the level of language, and those remarked in the general behavior of the patient.

Tissot et al. (1967) distinguish three types of disorder in subjects suffering from degenerative dementia: (a) disturbances of the semantic values of language which are in good correlation with the operational disintegration of these subjects. If morpho-syntactic values give rise to incomprehension when they are presented in an artificial linguistic context, they are preserved within the framework of more or less automatic utterances; (b) disturbances involving the first and second levels of language 'articulation' very close to those of aphasias (semantic and phonemic paraphasias); (c) iterations and verbal stereotypies appear conjointly with other motor stereotypies in the framework of a neurological disintegration.

III. ANATOMICAL PROBLEMS

The delimitation of the speech area presented by Dejerine before the First World War represented the synthesis of previous anatomoclinical findings and the author's own careful observations; it was widely accepted, in spite of P. Marie's attacks.

The movement away from localization predominated later, in the period between the World Wars; however, the anatomical studies which followed already tended to emphasize the results of a series of cases rather than of the presentation of detailed, individual, anatomoclinical observations. This method of research was to be used more and more after the Second World War.

The results of these works can be presented according to the nature of the material studied.

Vascular lesions

The material on vascular lesions has held an important place in the elaboration of classical data. Ch. Foix (1928) undertook a systematic study of the different vascular territories of the brain and clinical syndromes according to their different diseases. He has constituted a chart of the vascular territories of aphasia of the left hemisphere:

- total sylvian softening: global aphasia of the type of Broca's aphasia;
- superficial sylvian softening: Broca's aphasia;
- deep sylvian softening: Broca's aphasia or anarthria;
- incomplete, superficial sylvian softenings: (1) lesion of the anterior territory: anarthria from destruction of the pediculo-frontal area (with almost constant

impairment of the anarthrial quadrilatere; (2) lesions of the posterior territory: (a) extensive posterior softening: Wernicke's aphasia; (b) 'parieto-angular convolution' softening: moderate Wernicke's aphasia with alexia predominating; (c) 'temporo-angular gyrus' softening: Wernicke's aphasia;

– softening of posterior, cerebral artery, total or confined to the posterior part: alexia.

Critchley (1930) has emphasized the habitually transitory existence of aphasic and dysarthric disturbances, in cases of thromboses of the anterior cerebral artery of the dominant side.

Hoff (1961), in a study based principally on vascular lesions, arrives at the following systematization:

1. *Motor aphasia*: lesion of the region of the foot of F3 and in the rolandic operculum;

2. *Sensory aphasia*: cortico-sub-cortical focus of the middle and posterior parts of T1.

3. *Amnesic aphasia*: lesion of the angular gyrus.

Traumatic lesions

Although the localization in this case has only been specified in an approximate manner, the possibility of obtaining large series of observations (war traumatisms) gives an indisputable advantage to the study of post-traumatic aphasias. Despite his first thesis, the examination of persons suffering from cerebral wounds led P. Marie to distinguish four forms in his study with Ch. Foix (1917): temporal aphasia (pure Wernicke's aphasia); aphasia of the supramarginalis gyrus (global but moderate aphasia), aphasia of the angular gyrus (moderate Wernicke's aphasia with a predominance of alexia), small aphasic syndromes by superficial or marginal lesion of the language zone.

Based above all on the material on war traumatisms, Kleist (1934, 1956, 1962) establishes a dichotomy and symmetric classification of aphasic disorders and the attribution of each form to one lesion of a particular zone.

I. AT THE MOTOR LEVEL, he distinguishes:

1. *Muteness for the sounds of speech*, or anarthric aphasia, which represents a disorder in the phonetic units of speech and could only be innervatory apraxia of the formation of verbal sounds; it is caused by a lesion of the foot of FA (area 6).

2. *Word muteness*, in which the sound sequences are disturbed, stemming from a lesion of the foot of the F3.

3. *Name muteness*, a disturbance of the production of words as significative terms, which is related to a disturbance of the pars ascendens of the opercular part of F3.

4. *Sentence muteness* (agrammatism), resulting from a lesion situated between that producing muteness for words and that producing muteness for names.

II. AT THE SENSORY LEVEL, four similar forms are envisioned:

1. *Deafness for verbal sounds*, a perceptual rather than amnesic disturbance, which corresponds to the classic verbal deafness, is caused by either a subcortical lesion or a

lesion of the transverse cortical convolutions and possibly extended to T1.

2. *Verbal deafness*, which corresponds to Wernicke's cortical, sensory aphasia and is related to the lesion of the posterior part of T1.

3. *Name deafness*, a disorder of the comprehension of words as significative terms, is determined by the lesion of the posterior part of T1 and T2.

4. *Sentence deafness* (paragrammatism) occurs in cases of lesions of the first temporal convolution, whose precise location still remains uncertain.

Some important works have been published since the Second World War. Schiller (1947) arrives at the following conclusions, based on a study dealing with forty-six post-traumatic aphasics (penetrating wounds): frontal lesions result principally in disturbances of the incentive to speak, involving a decreased speed of elocution, as well as difficulties in the articulation of words and voice inflexion. Temporal lesions disturb the comprehension of spoken language and superior auditory control, and they provoke paraphasia, jargon and agrammatism. Posterior, temporal, and temporo-parietal lesions especially influence reading. In parietal lesions, the phenomena of perseveration and even stuttering are frequent, as well as distortion of words and sentences. Finally, it is in lesions of the posterior part of the sylvian area that Schiller has noted greatest deficiencies in abstract thought. He emphasizes the absence of localization of amnesic aphasia, which is never encountered in an isolated state, but which seems to occur in cases of each of the other forms of aphasia. While recognizing the value of the localization factor in the production of aphasic forms, Schiller concludes that the severity and extent of intellectual defects and of language anomalies are proportionate to the amount of tissue destroyed.

Conrad (1954) draws certain conclusions from his study of 216 cases of war-time brain injuries involving language disturbances. Broadly considered, motor aphasia is encountered in lesions of the motor part of the cortex: the lesions having caused these disorders do not regroup themselves around Broca's area, but, on the contrary, with a clinical picture analogous to that of Broca's aphasia, the studies witness a lesional localization close to Sylvius' fissure. Pure motor aphasia (the sub-cortical motor aphasia of the classics) is caused by perirolandic lesions. In case of lesion of the foot of the F3, a motor aphasia with regression is witnessed, while the cases which regress only a little correspond to extensive lesions of the motor area. Conrad, examining cases without motor aphasia, finds that their lesional site is situated outside of this region. For this author, pure motor aphasia and Broca's aphasia do not depend on different lesions, but on the greater or lesser extent of the lesions in this enlarged motor region. Sensory aphasia corresponds to lesions of the parietal region and of the base of T1. As for amnesic aphasia, the lesional locations are quite scattered and no localization can be determined.

Bay (1952) arrives at conclusions close to those of P. Marie; he distinguishes a persistent, cortical dysarthria due to a lesion of the lower part of Fa, a sensory aphasia due to a temporo-parietal lesion, and finally a mixed, or total, aphasia due to a lesion of the intermediate region.

Alajouanine, Castaigne, Fr. Lhermitte, Escourolle and De Ribaucourt (1957), reviewing the observations of twenty-three post-traumatic aphasics for whom a surgical operation was able to specify the extent of the lesion, distinguished aphasia with anterior suprasylvian lesions, aphasia with subsylvian lesions, and aphasias due to posterior suprasylvian and subsylvian lesions. In the first, articulatory disorders with phonetic disintegration syndrome and alterations of writing are in the foreground; disorders of comprehension are minimal or absent. In the subsylvian lesions they distinguish two groups: one corresponds to parieto-rolandic and anterior temporal lesions, whose symptomatology is that of Broca's aphasia with agrammatism, and whose recuperation is very bad; the other results from temporal lesions extended more to the rear and corresponding to Wernicke's aphasia and jargonaphasia. Supra- and subsylvian posterior lesions produce Wernicke's aphasias with jargonaphasia and alexia.

Russel and Espir's study (1961) deals with 186 cases of aphasia resulting from a left lesion in right-handed subjects. The authors emphasize a form which they consider to be essential and which they name central aphasia, characterized by an impairment of all aspects of language and resulting from an even partial lesion of the speech territory such as they define it: lower half of pre- and post-central gyri, angular gyrus, gyrus supramarginalis, lower parietal gyrus, and temporal lobe, excluding its lower part. For these authors, all language mechanisms are not necessarily located in this zone, but damage to this zone involves the impossibility of their utilization. On the other hand, the possible role of deep injuries (fornix-hippocampal system) is also suggested.

Studies of diverse aetiologies

Hécaen and Angelergues (1964) have attempted a quantitative study of the principal manifestations of language disorganizations, according to the place and extent of lesion, working with a group of 214 observations of right-handed subjects with verified left hemispheric lesion of an extremely variable nature, but with predominance of tumorous or traumatic lesions. In spite of the heterogeneity of the material, it appeared to them that some results could present some interest.

The progression of the intensity of the different disorders as a function of the extent of the lesion ought to be underlined; only isolated temporal lesions, and to a lesser degree, parietal lesions, produced a large proportion of aphasic symptoms. This intensity reached its maximum in the lesions involving three lobes (fronto-parieto-temporal lesions and parieto-temporo-occipital lesions), excluding articulatory disorders in posterior lesions.

Formulas for disorganization vary according to the location of the lesion, but they are never purely motor; on the other hand, temporo-occipital lesions and, in actual fact, parieto-occipital and parieto-temporo-occipital lesions give us the formula for sensory aphasia; their qualitative differences are difficult to systematize. Some of the other points made in this study should be mentioned:

1. In the case of anterior and parietal lesions, in contrast to other symptoms,

articulatory disorders have a certain importance, while they are minor or absent in temporal or occipital lesions. Inversely, reading disorders, while nearly disappearing in anterior lesions, only take on relative importance in occipital lesions (this fact would appear to be related to the presence of diseases limited to the internal surface).

2. The relative importance of agraphia and alexia is reversed according to whether it is a question of temporo-occipital lesions (lingual lobule), in which alexia predominates, or of parietal-occipital lesions (angular convolution), where agraphia prevails.

3. The presence of an important (or at least relatively important) disorder of naming is recorded throughout; the obvious increase in its intensity is linked, on one side, to the extent of the lesion, and on the other side to the temporal impairment. This finding, while confirming the opinion of numerous authors on the absence of localizatory value of verbal amnesia, show, however, its preferential relation to the destruction of Wernicke's zone. One notices also the importance of the effect of mass of the lesion on the disorganization of writing, in spite of a parietal-temporal factor.

In studying the importance of the diverse aphasic symptoms resulting from the impairment (whether isolated or not), on each of the lobes, and in opposing the degrees in the group involving the impairment of the lobe with that group which does not, one finds certain interesting elements. In particular, one will determine the role of rolandic lesions in articulatory disturbances, the role of frontal, parietal and temporal lesions appearing quite inferior on this point. Disorders of verbal comprehension appear essentially to be connected with temporal lesions and, to a clearly lesser degree, to parietal impairment. It is the same for naming disorder. As for disorders of repetition, if the temporal factor is the most important, the parietal factor would not appear to be greatly inferior to the former. For reading disorders the temporal and occipital injuries have the same importance, and the role of the parietal injury, although inferior, is not negligible. Finally, the role of the parietal injury would appear to predominate in writing disorders, but temporal, occipital and rolandic injuries ought also to be considered, and in that order of importance.

All these recent studies make it possible to confirm a 'language zone' capable of being very easily superimposed on the one which the diverse classic schemas defined, excluding the frontal and occipital poles and the superior and inferior regions of the hemisphere, except for the supplementary motor area. According to the site of the lesion, there would appear formulas of disorganization which would have different mechanisms, but which could be translated into rather analogous clinical pictures, as, for example, alexia of temporal lesions, alexia of the angular gyrus and occipital alexia, which have a certain unity by virtue of being alexias.

Several studies have been devoted to the anatomy of certain particular forms. The anatomy of CONDUCTION APHASIA has been studied in particular by Hoeft in the observations reported by Kleist (1962). In these conclusions Hoeft (1957), underlines, as other authors, the injury of the angular gyrus and the gyrus supramarginalis, but

also the impairment on the transverse (and especially the second) gyri as well as the planum temporale. We will also cite the observations with surgical (Stengel and Lodge-Patch 1955) or post-mortem (Ajuriaguerra and Hécaen 1956) verifications.

The PURE VERBAL DEAFNESS in the study by Schuster and Taterka (1926) was due to a lesion of the white substance subjacent to the two left transverse gyri. Concerning pure verbal deafness, Hoff (1961) concluded, from the study of his material and from cases reported in the literature on the subject, that pure verbal deafness could be caused either by the unilateral cortico-sub-cortical focus of a part of T1 and Heschl's gyri, or by the bilateral cortico-sub-cortical lesions of the anterior part of T1.

The study of the brain of a patient suffering from pure verbal deafness made by Mahoudeau et al. (1957) has shown that bilateral temporal lesions were involved.

Dejerine had related PURE ALEXIA to the lesion of the lingual lobule. Pötzl (1928) also asserted this lesional origin of pure alexia. In cases of war injuries, Kleist (1934) was only rarely able to establish pure optic alexia; this would be caused by deep subcortical lesions reaching the left, lateral, occipital convolutions which lie next to the angularis gyrus. When the focus affects the occipital convolutions themselves (02 and 03), object agnosia is added to alexia. Again, according to Kleist, the reading center does not reside in the angularis gyrus, but in the second occipital convolution.

The role of the lesion of the posterior part (splenium) of the corpus callosum has also been envisioned in the production of these pure alexias. Dejerine noted such an impairment in his study, but did not accord it any particular importance. Quensel (1931), on the other hand, emphasized the importance which it has in the production of this disorder. Ch. Foix shows, with Hillemand (1925), that alexia stems, in vascular lesions, not from a sylvian softening, as the other language disorders, but rather from a softening of the posterior cerebral artery, and he insists on the fact that one often finds, outside of the lesion of the lingual and fusiform lobules and of the cuneus, an injury of the inferior part of the splenium of the corpus callosum. This lesion existed, Foix adds, in two cases of reading disturbances, and was absent in a syndrome of the left posterior cerebral artery, which, although accompanied by hemianopsia, did not involve reading difficulties. A neurosurgical case reported by C. Vincent, M. David and P. Puech (1930) is in favor of this role of the commissural fibres linking the two visual centers: an alexia appearing after an accidental lesion of the splenium in the course of an operation. The role played by the callosal lesion in the determination of pure alexia has been maintained by Gloning, Seitelberger and Tschabitscher (1955).

On the other hand, Maspes (1948) found in subjects who had undergone a surgical section of the splenium without occipital lesion, that alexia occurred only in the left visual field, where letters were not recognized upon tachistoscopic exposition.

These works merit being recalled, especially since the question has been renewed by the studies of Sperry and Gazzaniga of subjects having undergone a commissurotomy, and by the interpretation which Geschwind gives of pure alexia as a syndrome of disconnection (lesion of the splenium inhibiting the transmission to language centers of

information which, because of the right hemianopsia, reaches only the right hemisphere).

Language Representation and the Right Hemisphere

Since Broca brought to light, in 1865, the relation between the function of articulated language and the left hemisphere, any role other than compensation was denied to the other hemisphere in the right-handed person. A tendency has been shown in the last few years to consider its participation, naturally in a minor form, in linguistic activities.

Excluding cases of crossed aphasia which are exceptional in the right-handed person with no family stock of left-handedness (Ettlinger, Jackson and Zangwill 1955; Angelergues et al. 1962; B. Clarke and Zangwill 1965), arguments in favor of this participation of the right hemisphere in language functions derive from several types of findings. We cite the results of left hemispherectomies, of intracarotid injections of sodium amylal (Wada's test) due to B. Milner, and above all those of callosal sections (Sperry and Gazzaniga). Outside of those important findings obtained in the United States, research in Europe has dealt with the realizations of language in patients suffering from lesions of the 'minor' hemisphere.

Thus, Critchley (1962), based on his clinical experience, establishes as frequent symptoms of right lesional attacks: (1) articulatory disorders, often transitory, however; (2) injury of creative, literary faculties; (3) hesitations or blockage in word-finding, with recourse to circumlocutions and curious explanations (Metonymous paralogia); (4) difficulties in learning new linguistic material; (5) 'non-aphasic disorders of naming' (Misnaming); (6) difficulties in comprehending the real signification of pictorial matter owing to a disorder of one of the modalities of symbolic formulation.

P. Marcie et al. (1965) have analyzed, in twenty-eight subjects with right hemispheric lesions, the results obtained by tests identical to those used with aphasics. Generally confirming the preceding studies, they have not found disorders comparable to those provoked by lesions of the language zone of the left hemisphere; certain slight anomalies which were found could be accounted for by the sociocultural level or by the anxiety producing aspect of the examination. However, three types of disturbances appeared:

1. Tests of word, nonsense syllables and sentence repetition revealed, in patients whose lesion was rolandic or fronto-rolandic, disturbances which were remarkable, although without reaching the degree of intensity nor the extent of distribution reached in motor aphasics: the percentage of phonic errors could reach 20% and the average for the group of patients was 9% while the parkinsonian control groups presented 3% errors. The distribution of errors, according to the length and significant or non-significant character of the items, made it possible also to affirm, on the one hand, the difference with left lesions, and, on the other, the close relationship with the normal

curve, the only difference being a greater number of errors than with the control subjects. A detailed examination of the results revealed that the patients with right lesions who presented examples of the most accentuated expressive defect also showed dysprosody in reading aloud and in spontaneous language.

2. A second type of disturbance had been noted in the execution of various tests of transformation and selection of vocabulary: difficulty on the part of a patient in passing from one transformation to another was revealed by an inertia which took the form of a repetition of the preceding response to the question, of the preceding grammatical model, etc. ... After having proceeded to a quantification of the phenomena, the authors arrived at results (total importance of the perseveration and distribution of errors) which showed sharp differences with normal subjects. The subjects suffering from right lesions, in contrast with the parkinsonians, had a distribution of relatively regular perseveration. A close study of the groups presenting a massive perseveration in oral language revealed that these subjects also had a written perseveration (reiteration of down strokes) and were usually suffering from parietal or parieto-occipital lesions.

3. There was also a disturbance in the production of sentences (to make a sentence following some words given by the examiner). Reexamining these first results on a group of fifty-three patients whose lesional localization was verified, G. Assal (1968) determined that if 70% of the patients delivered performances which were on all points analogous to the control group of normal patients, the others presented disorders which can be reduced to two: either an incapacity for producing all the sentences given (the patient could, however, always do at least one, except in one case) or a discursiveness (abnormally long sentences) which was remarked especially in patients suffering from temporal lesions, or in particular at the tip of this lobe; these subjects did not often present any other disturbance on the verbal examinations.

Disorders of Written Language and Calculation in Cases of Right Hemispheric Lesions

These have been the subject of a general study by H. Hécaen (1968). The particular characteristics of these disorders clearly separates them from reading, writing and calculation disorders encountered in cases of lesions of the dominant hemisphere, while they suggest a visuo-spatial disorder at their origin which is manifest in the practognosic symptoms with which they are frequently associated.

Spatial Dyslexia

Most often the errors are revealed at the level of the reading of a text and rarely at the level of a word. The disorder seems to stem from two types of disturbances: inability to fixate the word or the text and to pass from one line to another, on the one hand, and neglect of the left part of the text, on the other; furthermore, the two disorders are frequently associated.

The frequency of these disorders appears rather high: 23.4% in a series of 146 verified cases of right hemispheric lesions.

Spatial Dysgraphia

Contrary to what has been found in graphic disturbances due to lesions of the dominant hemisphere, graphemes are well traced and the morphosyntactic components respected. The disorders involve four principal aspects: (1) writing on the right side of the page; (2) inability to maintain a straight line (descending or ascending diagonal, or wavy writing); (3) iterations of down strokes, essentially (m, n, i, u), letters rarely, and groups of letters exceptionally; (4) separation and displacement of parts of words. These alterations usually do not destroy the actual structure of the word, which remains legible.

The frequency of these graphic disorders is important (21.9% out of 146 cases of verified right hemispheric lesions).

Spatial Dyscalculia

The principle of arithmetic operations is conserved, but errors due to disregard of the position of the figures in relation to each other, as well as to neglect in reading a part of the figures situated to the left. These errors are sometimes corrected secondarily by patients. It is necessary to point out that, contrary to what one finds in cases of acalculias due to left lesions, the difficulty is similar no matter what type, or how difficult the arithmetic operation is.

The frequency of these disturbances of written calculations is also relatively high (19%).

These three types of disorder are related to each other in a statistically significant way, as is the case with a certain number of disorders whose lesional origin depends on posterior lesions of the right hemisphere, yet certain symptomatic associations only have a significant connection with one or the other of these three disorders. It seems, then, that an element of a common base can be attributed to them, while certain individual factors may intervene more specifically for each of them.

The common element in these three types of language disturbance was a difficulty in the spatial organization of the graphic decoding or encoding, while the utilization itself of the units of codes, graphemes, or figures was not disturbed. Thus mental calculation is only rarely disturbed in cases of right lesions, complex orders are well read by these patients and no morphosyntactic disorder was noted in their graphic productions.

The relationship between reading disorders and perseveration in oral tests of grammatical transformation, established in the study made by P. Marcie et al. (1965) on subjects suffering from right lesions, makes it possible to state that a general factor in the occurrence of perseveration is revealed in a particular domain: that of the spatial organization of writing and constructive tasks.

On the anatomical level, the statistical study of the material made it possible to determine the role of parietal and above all occipital injuries in the determination of spatial dyslexias and dyscalculias, with the exclusion of the role of frontal lesions, while no privileged role for lesions of one of the lobes could be determined for dysgraphias, which are usually encountered, although in general in an attenuated manner, in cases of frontal lesions.

Thus, following the pathological study, the participation of the right hemisphere in written language activities can be determined, but this participation concerns the spatial conditions of reading and writing, as in calculating, and not the code, or encoding of code elements. The organization would also appear to be more spread out than for the left hemisphere, the disturbance often affecting these three activities at the same time. Nevertheless, the predominance of the occipital lesions in reading disorders, of the occipital, and above all the parietal lesion in dyscalculias, reproduced grosso modo the localization of the mechanisms underlying these activities in the area of the left hemisphere. No privileged lesional topography was found for spatial dysgraphias, which is parallel to the dispersion of lesional sites determining agraphias in the left hemisphere, with the important exception that, in this hemisphere, certain diverse mechanisms are very probably responsible for the writing disorders by reason of the polymorphism that they assume, and which is, in contrast with the uniformity of the graphic disorders, due to right lesions.

IV. THE NEUROLINGUISTIC APPROACH

Although some aphasiologists, among whom it is necessary to cite Ombredane (1951), Grewel (1951, 1961), and Schenk (1953), had already emphasized the interest in and necessity of making use of the fundamental ideas of linguistics in studying aphasia, it was the appearance in 1956 of Jakobson and Halle's *Fundamentals of language* which marked the point of departure of pluridisciplinary studies of aphasia; neurologists, linguists, and psycholinguists have worked together since then, and linguistic models have been applied to the study of language disorders.

Since 1963, the C.N.R.S. in France has entrusted to the author of this article the direction of a cooperative research program dedicated to the study of aphasia. The examination of aphasic subjects has since then been conducted from the triple neurological, linguistic and psycholinguistic point of view.

In Great Britain, in the section of Psycholinguistic Research created by Professor Oldfield in Oxford, then moved to Edinburgh, the works on language disorders have been conducted parallel to research on the language of normal subjects.

We also note the appearance, in 1963, of a long article by Sabouraud, Gagnepain and Sabouraud, dedicated to the report of a linguistic approach to aphasia. The basis for their division of aphasias into Broca's aphasia and Wernicke's aphasia, each possessing antithetical characteristics, on the phonological as well as semiotic

level, is at bottom rather similar to R. Jakobson's, no matter what the authors say about it. In effect, they substitute the opposition between disorders of the contrasting of texts and disorders of lexical oppositions for the opposition between the metaphoric and metonymic poles; deepening the analysis, they subdivide the contrastive disorders according to whether these touch the phonological units or the linguistic units at the phonetic level, and the other units at the lexical level. For these authors, Broca's aphasia is thus characterized by the inability to structure semiotic contrasts in a text and to combine in one chain a sufficient number of phonological contrasts, while Wernicke's aphasia is characterized, in semiotics, by the disorder of lexical oppositions and, in phonology, by disturbances in the choice of phonemes constituting chains.

In a series of publications (1963, 1964, 1965, 1967a-d), we have, for our part, and in daily collaboration with linguists under the direction of J. Dubois, tried to integrate the results obtained by the methods and techniques of linguistics and psycholinguistics with anatomoclinical findings. Our goal has been, essentially, to realize a linguistic typology of observed verbal behaviors, and to research the correlations with anatomoclinical facts, in order to arrive at a neurolinguistic typology. To this end, a series of tests has been elaborated, following taxonomic, distributional and finally generative and transformational models, in order to analyze the performances of patients.

These tests have been administered to control groups, either normal subjects of the same socio-cultural level, or subjects with lesions of the right hemisphere (Marcie et al. 1965), or subjects with diffuse lesions, involving a demented state (Irigaray 1967, 1968), or with subcortical lesions (Dubois et al. 1966).

These studies, in particular those on right hemispheric syndromes and parkinsonian syndromes, have allowed us to define certain aspects of verbal performances, to exclude them from aphasic disturbance and to link them to general factors in relation with all cerebral damage, no matter what its location. It is important, therefore, to recognize the intervention of these general factors in the verbal realizations of subjects with a left hemispheric lesion, in order to determine their interference in aphasic disorders themselves.

The typology at which we are progressively arriving is not to be at all definitive. It tries to translate only a moment of neurolinguistic research, while permitting new observations or experiments to refute it, or at best, to complete and refine it. This classification will thus be used here to present the results obtained either by us or the works of other researchers.

Although it could be a simple artifact of our means of investigation, the concordance between anatomoclinical facts and linguistic analyses would seem to authorize an attempt at a synthesis of this sort, and it is already possible to say that pluridisciplinary research tends to confirm the intuition of those clinicians who have supported the plurality of specific forms in aphasia, against those who, after having eliminated the isolated disorders of reception and expression from its domain, conceived aphasia as A SINGLE phenomenon.

It is to be noted, in addition, that we have admitted the reality of 'pure' isolated forms whose occasionally exceptional character has been able to cast doubt upon such an autonomy, and that we have postulated that the more complex syndromes represented mixed syndromes, in contrast to those for whom these forms meant the profound unity of the aphasic disorder.

In fact, the fundamental problems which stem from the classification of aphasic disorders, on the one hand, and the fundamental explanation of the disorder which arises from either a dysfunction of a unique base, or from varied disturbances of diverse factors, depend for their solution on the theory of language which underlies, in a word, all neurolinguistic study.

Distributional and structural linguistics emphasized the qualitative difference between the diverse levels at which elements are combined to produce units at a higher level: this results not only in the definition of aphasias corresponding to the diverse levels (phonemes, morphemes, sentences), but also, and above all, in the assertion that unity is found only in the fact that language is an integrative synthesis of a group of different functions. Since, in a second part of the theory, distributionalist or functionalist linguists identified the levels of analysis with precise and real functions, it is evident also that aphasia appeared as unique, with diverse modalities, in the sense that it truly appeared as a disorder of the language function.

Since generative and transformational linguistics has defined language as linguistic knowledge composed of proprieties defined by the human speech faculty (model of competence), put to work in a performance model, containing a group of factors depending on the subject and the context, the neurolinguistic problem of aphasia has been presented in different terms. It could only be a language disorder, properly speaking, if the model of competence, the intuitive linguistic knowledge of the subject speaking, were disturbed; but it was a question of dysfunctions involving the diverse components which enter into the effective realization of verbal messages, while the classifications were justified to the extent that they arose not from the model of competence, but from the performance model. Thus, in defining the functioning of language on another basis, generative psycholinguistics justified the operational classifications, while each of the diverse modalities was not identified with a specific disorder of linguistic aptitude; the fundamental question about the disorder is raised only at the level of the model of competence. If this element were damaged, only then could one speak of a fundamental, basic disturbance, attacking the whole of the function.

A certain number of arguments can be advanced already, however, which bear witness that in cases of aphasia the deficit is not concerned with the components of rules (semantic, syntactic, morphophonological) but with the activation of these components. Two types of proof, negative and positive, can be shown in favor of this integrity of the model of competence.

The first are based on the establishment of DISSYMMETRY and VARIABILITY in the deficits noted and the recorded performances of the patients. This dissymmetry is at the

base of all the typologies presented: dissymmetry between emission and reception, between spoken and written realizations, between graphic emission and graphic reception, and, within these large divisions, between the levels damaged and that of the syllable, of sentence constituents, and of the sentence, if not more complex dissymmetries between the sensory modalities, between the lexical fields (selective damage of denominations of body parts, colors, etc. ...). In an elementary way, if one posits that the models of the emittor and of the receiver are derived from a single model of competence, and that their differences are due to various factors which enter into the emission and reception of language, one ought to establish that the model of competence remains intact. This integrity is again justified by a double VARIABILITY. One participates synchronically in performances: every motor aphasic produces combinations at one moment which would be impossible at the next; this implies that at this level the model of competence remains intact, but that the effective realization of it is hindered by a deficit which is itself inconstant. The variability is situated diachronically in the course of recuperations. The aphasic relearns neither the language nor the constitutive rules of speaking. The disappearance of certain obstacles to production, or the mastering of certain deficits, permits a better realization of the rules which remain, however, the same as those which the patient possessed with his sickness. There is no relearning of language, but recuperation of verbal habits. It is the same for the CONTROL OF ERRORS, either that the recuperation of verbal habits is accomplished during the performance itself, or that it is accomplished in the utterances produced or with errors which are presented and corrected. The deficits recorded on this point, variable in time, also depend on factors involved in the model of performance.

The profound unity of aphasias is beyond the particular deficits, in the conservation of the model of competence in its totality, not of rules (phonological or syntactic) considered as isolated entities, but of the ensemble of grammatical rules. Verbal activity is conditioned by knowledge of the rules of syntax.

A. *Disorders of Oral Language*

Expressive aphasias

This group should be subdivided into three subgroups, emphasizing that the first two varieties are very close to one another, while the third is noticeably isolated, but conserving, however, the essential characteristics of an aphasia of expression by the absence of disorder of reception and comprehension.

Aphasia for phonemic realization

This corresponds to the *motor aphasia* of the classics, to the 'anarthria' of P. Marie (1906), to the 'verbal aphasia' of H. Head (1926), to the syndrome of phonetic disintegration of Alajouanine, Ombredane and Durand (1939): there are no, or minimal, disturbances of comprehension. It involves almost constantly, on the other hand, graphic disorders whose characteristics and intensity are not parallel to those of speech disorders.

D. Cohen et al. (1963) have analyzed the verbal utterances of patients so grouped by utilizing the taxonomical model which makes it possible to classify the disorder at the phonemic level, and the distributional model which permits the specification of damage to the subunits of phonemes.

Thus certain characteristics of the emission of these patients were able to be specified: permanence of vocalic systems, more marked deficits for fricatives and liquids and a lesser deficit for occlusives, greater disturbances of consonantal groups, modifications of vowel formants by consonantal transitions, occurrences of vocalic, consonantal, or even syllabic anticipation, and occurrences of perseveration.

In addition, the establishment of the variability of realizations shows the conservation of the phonological system with, simply, some more frequent deficient zones of distribution.

At the suprasegmental level (intonation), selective phenomena were also found (slowing down of the flow of vowels by compensation, foreign accent realized by the diphthongization of vowels).

The analogy between these results and those obtained by Shankweiler and Harris (1965) in their study of phonemic errors in cases of expressive aphasia is to be emphasized.

As for the agraphia which accompanies oral disorders, it is marked by three dissociations: (1) the writing copied is in effect almost always intact; (2) figures and numbers are in general well written; (3) the dictation of significant units results in performances quite superior to dictation of nonsense syllables.

Agrammatical aphasia or disorder of syntactic realization

It is more a question here of a variant of the preceding form than of a distinct form (verbal comprehension and reading not being more disturbed, and writing disturbances being similar). It is revealed primarily by discourse made of isolated words, (substantives, verbs in nominal form with reduction of grammatical words), which are, moreover, perfectly pronounced; the phonic accidents are only revealed in repetition.

In 1922, Isserlin, developing the analyses of agrammatism already given before the First World War by Pick and by Kleist, confirmed the existence of two forms encountered by Kleist: expressive agrammatism in the motor aphasic and paragrammatism in the sensory aphasic.

Isserlin insists on the conservation, in patients, of the ability to discriminate between correct and incorrect grammatical forms which are presented to them, and on the fact that the language of agrammatism is correct without either literal or semantic paraphasias.

D. Cohen and H. Hécaen (1965) have again undertaken the analysis of expressive agrammatism, following an experiment in which the disorder was revealed in a particularly distinct manner.

It is thus possible to establish:

1. Agrammatism is defined as a deficit situated in the area of the first articulation of

A. Martinet or, in another terminology, at the level of the constituent parts of the immediate constituents of the sentence. Contrasts between syntactic variants are omitted.

2. Agrammatism is opposed to motor aphasia, whose deficit involves the program of phonemic realizations, since the constituent monemes (or morphemes) are emitted without error in spontaneous discourse, the phonic deficit appearing only at the level of repetitions of words and nonsense syllables. The specific distribution of errors is made above in the final letter, not on the initial letter.

3. The definition of the deficit presents two aspects:

a) The reduction of syntactic patterns which are limited to the nominal syntagm whose determinant can eventually indicate the function in what would have been the normal pattern (circumstantial subject), or whose position relative to other syntagms involves the function (utterance of two successive nominal syntagms).

b) The conservation of lexemes, but with weakening of the lexical stock.

The linguistic economy of agrammatism is seen in the general reduction of the utterance: a) Explicit references to the situation are replaced by implicit references; thus the three elements 'I, here, now', implied by the fact of the enunciation, are not expressed. Since the message is situated in time by the presence of the listener, the temporal indications are reduced. b) The reduction of phrase patterns ends in a diminution of the number of such markers.

Conduction aphasia or disorder of sentence programming

J. Dubois et al. (1964), then P. Marcie (1967), have conducted an analysis of the spontaneous and induced verbal performances of six patients exhibiting the syndrome very clearly.

This analysis reveals that conduction aphasia is an expressive aphasia, but that the disorder in this case does not concern the phonemic realization, but rather sentence programming, in specifying that, if the capacity for manipulating the grammatical code remains intact, the concatenation of realized elements is profoundly disturbed. The disorder is particularly revealed in tests of repetition (words, nonsense syllables, sentences) and those of syntactic encoding into a single phrase of two, three or four words furnished to the patient.

The test of recognition of opposites is equally revealing: these patients manage to give semantic opposites (of the type rich/poor), while they do not succeed in any way in producing the morphological opposites (of the type just-unjust). It is to be noted that exactly the opposite behavior on this test of opposites is encountered in cases of amnesic aphasia. Writing disorders are constant and, in spite of the presence of characteristics common to agraphia of expressive aphasias (literal paragraphias, spelling difficulties, conservation of the copying process), the differences are distinct: presence of paragraphias due to telescoping or substitution, omission of lexemes, absence of syntactic anomalies (Hécaen and P. Marie 1967).

The results of this analysis of the syndrome of conduction aphasia make it possible to consider this type of aphasia as an autonomous form of disorganization of expres-

sive aphasias, quite distinct from aphasia for phonemic realization, and to underline the total absence of structural similarity to sensory aphasia.

Amnesic aphasia or disorder of morpheme selection

Recent anatomical findings show that disturbance of verbal evocation may appear with quite diverse lesional locations. It is known, on the other hand, that they are encountered in association with different aphasic syndromes. It is not surprising, therefore, that many tend to deny the particular character of amnesic aphasia, and see in it only the expression of any damage to 'inner speech'.

However, given that there are some cases in which the impairment of word-finding is presented in an almost isolated manner, one wonders if the disorders of naming are only similar in appearance when they are presented in diverse aphasic contexts. Goldstein (1948) has already taken on the task of specifying different aspects of the naming disorder according to whether they witnessed true amnesic aphasia, disorder of the instrumentalities of language, or a general amnesic phenomenon, as with the aged. Other experiments ought to be conducted in order to determine precisely the characteristics of the disorder, the types of responses (schema of usage or paraphasia), the facilitating role of formal or syntactic constraints, and the relationship or absence of a relationship with the sensory modality in which the object stimulus is presented. Ombredane (1933) has distinguished three types of behavior in aphasics on a naming test, either alternating diverse objects or repeating the same object: progressive facilitation, progressive inhibition and oscillating behavior, or alternation of facilitation and inhibition.

One ought, however, to take into account the results of systematic research projects done on verbal denomination. Thus, according to Rochford and Williams (1963), difficulties of naming are inversely proportional to the frequency of word usage: when, in case of failure, diverse processes of facilitation are proposed to patients — as the description of the use of the object, the verbal context, evocation by another term rhyming with the one being sought, the pronunciation of the word itself in another context, or spelling it — the difficulty which the subjects find in naming the object can be evaluated by the number of means of facilitation required in order to obtain the pronunciation of the word. These authors emphasize that difficulties of denomination in the aphasic are revealed as parallel to the development of denomination in the child; the study of the normal subject has shown, on the other hand, that, under experimental conditions, errors of denomination occur in the same patterns as in dysphasics, and that they depend on the order of frequency of diverse words and their semantic or perceptual relations. Thus, tendencies to err which exist in the normal person could no longer be inhibited in the aphasic. In addition, according to M. Wykes (1962), it is easier to obtain a correct response when the aphasic's choice of responses is restrained by the stimulus situation. It should be emphasized that the responses are not made at random, but are connected in some way to the signification of the object-stimulus.

The investigations of Newcombe, Oldfield and Wingfield (1965, 1966) would all tend to prove that the disturbance of naming translates a common mode of language deterioration. The curves of percentage of success in denomination, according to the logarithm of the frequency of the usage of the word in the language, were similar for a control group and for wounded persons with right or left unilateral hemispheric lesions, but without clinically discernible aphasia. For aphasics, the curve differed notably from the ones just mentioned, but rejoined the other curves for words of great frequency of use. (In order to discern a slight degree of aphasia, it would appear to be necessary to have objects named whose name has a frequency of around 1/100,000 words). On the contrary, curves which indicate the time of delay of the response discriminate between the four preceding groups. All the subjects with cerebral lesion indicate a slowing down of response time in relation to normal subjects, the aphasics' curve naturally revealing the longest time of average delay and the steepest slope, but the subjects with right lesion have a longer delay time than subjects with left lesion without 'clinical' aphasia.

On the psycholinguistic level, the naming disturbances can be viewed in these two principal aspects:

a) In the spontaneous or induced utterance, morphemes the least subject to textual constraints are the most likely to disappear, as are proper nouns, whose signification varies with the object and denominative terms (names, objects), etc. ...

b) In the naming test in which the terms are separated from their context, and where only the denotative value is retained, the omission is a function both of the unfamiliarity of the object and of the frequency of usage of the word (Oldfield).

It is thus certain that a revision of the notion of amnesic aphasia is necessary before concluding. Perhaps this would be possible, if one takes into account the results obtained by diversifying the test: response according to stimulus, response according to frequency, familiarity or recency, occurrence of the disorder in spontaneous language or in the testing situation, presence or absence of compensation for the deficit by the textual or syllabic context, analysis of the associations corresponding to the predominance of such and such an aspect, and finally, anatomoclinical confrontation of the different types thus isolated.

B. *Sensory Aphasias*

H. Hécaen, J. Dubois and P. Marcie (1967a, 1967b) have attempted to distinguish in the syndrome complex represented by sensory aphasia (Wernicke's aphasia) the role of factors which intervene in it conjointly, but in different proportions according to the cases. When one of them predominates, a particular aspect of the syndrome is realized. The three factors thus indicated can be symbolized by the concepts of VERBAL DEAFNESS, DISORDER OF VERBAL COMPREHENSION, and ATTENTIONAL DISORGANIZATION. These three factors intervene most often conjointly, but the possibility of their almost isolated action would appear to be real.

The predominant aspect of VERBAL DEAFNESS is indicated by the following description of linguistic performances: inability to repeat items (words, nonsense syllables or phrases) is total, the response appearing to be simply a sequence whose syllabic structure is farther removed from the model the longer the latter is; the spontaneous language is characterized by its thematic coherence, although paraphasias and substitutions, as well as the anomality of the sentences, render it difficult to understand (by telescoping or phonic approximation); reading is quite clearly superior to the reception of verbal signs, but paralexias are more numerous and profound the more complex the text. Writing from dictation is impossible. Spontaneous writing, although always disturbed, also reveals thematic persistence and paragraphias remain relatively slight. The copying is intact.

When the DISTURBANCE OF VERBAL COMPREHENSION is predominant, the picture of the disorganization is very clearly different. The reception of verbal signs is, in effect, relatively conserved, as the performances of repetition attest. The repetition of words is easier as the signification serves as an aid; the repetition of nonsense syllables is always significantly more disturbed than that of words; in addition, the items on which distortions occur conserve, on the whole, a certain kinship with the form of the model. The repetition of short sentences is correct, but the execution of orders given orally is greatly deficient and is only slightly improved by repeating this order just before the patient tries to execute it. Spontaneous language is extremely diffluent, made up of a succession of parentheses, with normal melodic contours, and involves numerous substitutive or even neological paraphasias and numerous agrammaticalities; writing from dictation is relatively correct, while spontaneous writing is highly paragraphic.

A third factor may be distinguished in sensory aphasia under the name of ATTENTIONAL DISORGANIZATION (1967b). Thus, a factor which affects in a specific way the linguistic behavior of patients is isolated. To the degree to which there is no disturbance of comprehension or verbal deafness, at least in important proportions, the repetition of words, nonsense syllables or sentences does not suffer any impairment. The disorder clearly appeared in spontaneous language and in tests of grammatical transformations with a double aspect of echolalia and distraction.

Although there are as yet only a few anatomical documents that are certain, it seems that the different lesional sites, although always at the level of the left temporal lobe, can be determined for each of the three aspects thus distinguished (respectively, upper temporal lesion and middle temporal lesion near Heschl's gyri, posterior and inferior temporal lesion, and lesion of the temporal tip).

In a different perspective, Angelergues, Cohen and Gauthier (1967), in underlining the role of regulating mechanisms of post-control, refuse to confirm the mechanical model of an impairment of perception implied by the term verbal deafness, even in sensory aphasics. They want to put the accent on the particular impairment of the language act which characterizes the sensory aphasic's disorder. Based on the study of the patients' behavior on three types of clinical test, repetition, verbal exchange, and

execution of orders, they insist on the sensory aphasic's inability to adjust to the situation, to organize the discourse with themselves as speaker, to really integrate and manipulate the verbal order, while the verbal code may always be utilized at a low level of verbal practice.

C. *Disorders of Written Language*

We note the analysis done by F. Lhermitte, A.R. Lecours and B. Ouvry (1967) of a corpus of paralexias and paragraphias obtained with diverse types of aphasics and on the basis of a model of five units and four articulations combining the systems of Martinet and Buyssens. These authors defined three major categories of errors, according to the type of relationship connecting the incorrect unit with the generative unit of the transformation: 1) substitution by a similar unit, 2) an error caused by a relation of habitual contiguity between the unit which generates the error and the incorrect unit, 3) error of seriation.

Only types of errors 1 and 3 have been encountered with a strong predominance in certain patients. These three categories of errors concern, according to the subject, either the units of one articulation or those of another articulation. The authors conclude from their analysis that paragraphias and paralexias can depend upon different disturbances of the physiological systems responsible for the verbal gesture: impairment of the activity of selecting from a collection of morphologically or semantically similar units; disturbance of the seriation of units in conventional sequence.

Agraphia

In addition to the disturbances of writing connected with different aphasic syndromes, several studies have been devoted to agraphias found without impairment of verbal language.

Apraxic agraphias

The role of gestural disturbances appeared predominant in these agraphic varieties, but it could not be considered exclusive, since the disturbance does not uniquely concern the realization of graphemes, and several disorders of spelling, as well as of the construction of words with alphabetic cubes, have been more frequently noted.

Two principal aspects of these apraxic agraphias, corresponding to different lesional sites, can be distinguished.

In the first, the agraphia occurs in relation with a left unilateral ideo-motor apraxia (magnetic apraxia) and with psycho-motor disorders of this same upper extremity. The relation here is indirect, given that the apraxia does not affect the hand which writes. In this case it is the realization of graphemes, and not the graphic code, which is disturbed. However, difficulties with the composition of words with alphabetic cubes and with spelling are also encountered. The lesion would appear to predominate in the area of the frontal lobes (Hécaen and Angelergues 1965).

In the second variety, agraphia seemed to depend on an impairment of graphic encoding, and the association with alexia, in spite of the absence of a parallelism between the intensities of the two disorders, makes it possible to admit the presence of a joint disturbance of the coding and decoding of written language, with a minimum of oral language disorders. This alexia-agraphia syndrome is determined by inferior parietal lesions.

The disorder involves the two articulations of writing: praxic difficulties with the realization of graphemes, and disorders of the constitution of graphic morphemes. On the other hand, the syntactic structure of sentences is preserved. The three modalities of writing are affected, as is the writing of figures and numbers. The programming of the graphic message is defective (Hécaen 1967; Hécaen and Dubois 1967).

'PURE' AGRAPHIA, understood as occurring without a disturbance of either the spoken code, reading, or of praxic functions, is exceptional, at very best, and placed in doubt by numerous authors. However, Hécaen, Angelergues and Douzenis (1963) have already been able to present a rather revealing case of it. The study of these 'pure' agraphias has again been undertaken by Dubois, Hécaen and Marcie (1969) in five new cases and has made it possible to underline certain of their characteristics and the relative unity of the disturbances. Performances in the last case were marked essentially by the predominance of incidences of iteration.

The following are the traits common to the graphic performances of the first five patients: the writing and morphographemic rules are preserved, copying is intact or a very little disturbed; the sound-letter correspondence is also undisturbed (conservation of reading, the slightest perturbation of spelling in three of the subjects). The role of gestural activity is manifest in a comparison of the performances in composition with alphabetic cubes and in writing by hand: improvement is clear when the writing is done with cubes.

The analysis of dysorthographias in the patients shows, finally, that the disorder can either be of the combinatory type, or can involve the selection of letters or, further, represent an association of these two types.

The anatomoclinical findings collected in these five observations are somewhat in favor of an anterior lesion to the origin of graphic disorders, while, in the sixth observation, characterized by incidences of perseveration, it involved a lesion of posterior location (temporo-occipital tumor).

Because of the exceptional character of these agraphic phenomena dissociated from language disorders, the roles played by factors other than that of the lesional topography ought to be sought, no matter what its importance. The role of intellectual deterioration and of the type of hemispheric organization found only in left-handed subjects ought especially to be studied.

Alexias

Proceeding to a revision of his observations of alexia, Hécaen (1967b) has been able to utilize the classic division of alexias of sensory aphasia, agraphia-alexia syndromes

and so-called 'pure' alexias, that is without agraphia. The neurolinguistic study of this last variety has been undertaken since then.

'Pure' alexia

In contrast to 'pure' agraphia, this isolated form of written language disorder is recognized by all. Nevertheless, for some it should be separated from language disorders and considered either as a specialized optical agnosia, or as the expression of a fundamental disorder, a loss of the structuring of forms.

'Pure' alexia is opposed to other reading disorders of cortical origin by the absence of language disorders (fluency of discourse, preservation of comprehension), with the exception of a certain degree of impairment of verbal naming, by the conservation of the perceptive strategy of reading, by the integrity of writing and spelling or at least by the dissociation between the intensity of reading disorders and those of either writing from dictation or spontaneous writing. Copying, on the other hand, is always disturbed. Acalculia is frequent, but in general not severe, and visual agnosias (objects, colors, pictures) are not constant, and of weak intensity when they do occur. Right, homonymous, lateral hemianopsis is always found.

Reading disorders can be presented in three different aspects, distinguished long ago by classical authors, but until now considered as simple degrees of intensity of the disorder: global alexia, literal alexia, verbal alexia.

The study of his observations of 'pure' alexia has enabled Hécaen to verify the reality of these three modalities of reading disorders. However, the separation between verbal alexia and literal alexia should not be considered to be absolute, each of these two forms corresponding only to a clear predominance of reading difficulties with letters or with words. In spite of this reservation, this same study has led to the conclusion that these three forms should no longer be considered merely as signs of the greater or lesser severity of the disorder, but should be recognized as having disttinct strucural characteristics.

Verbal alexia

Patients are capable of recognizing most of the letters, or at least of making only a few errors in their identification. The difficulties increase if the letter is presented in an oblique or reversed position, or if it is presented rapidly (tachistoscopia).

With this letter by letter deciphering, the subject succeeds in reading some words by successive spellings, but difficulties occur when the word length is increased. The perceptive strategy would appear to be conserved here, the patient first deciphering the letters at the beginning of the word and sometimes continuing to the end of the word, but the spelling technique leading him more often from left to right.

Nonsense syllables are also well read with this form of alexia. When the damage is relatively slight, and there is thus a possibility of reading all the words, simple orders can be read and executed. Errors occur with semi-complex orders. Failure is in general total with complex orders, which sometimes can be read very slowly by spelling, but in this case the patient no longer remembers the different terms of the order when he arrives at the end of his reading. Reading a text is usually totally impossible.

Isolated figures and numbers up to three digits are always well read, while errors occur with large numbers. Some errors are found in arithmetical operations, but the general mathematical principle is preserved.

Copying is almost always disturbed and sometimes severely so, but the transformation of upper case letters into cursive form is normally successful. Paragraphias are rare in the copies made by these patients. Dictated and spontaneous writing shows, in general, only (minimal) dysorthographic errors, which cannot be explained in all cases, by the socio-cultural level or the absence of visual control.

Writing of figures and numbers is always well executed.

Occurrences of visual agnosia (pictures, colors) are frequently found, but in general it is not severe. Right homonymous lateral hemianopsia appears constant.

Literal alexia

The identification of letters is rarely destroyed completely but the errors are much more numerous than in the identification of words. Among the latter the lexemes are clearly better read than functional words and nonsense syllables.

Paralexias are frequent in the reading of words: the reading is accomplished, approximately according to the graphic form of the word, especially for the final letters; paralexias are produced 'semantic sphere' (Beringer and Stein 1930), the patient giving the semantic category of the word to be read with, occasionally, but secondarily, a differentiation; sometimes the word read has only a very uncertain relation with the item.

The observation of a case of 'pure' alexia in a female patient, published by Beringer and Stein in 1930, is equally as conclusive. In effect, the patient, incapable of reading a single letter, and who had particular difficulties in identifying functional words, succeeds in identifying eleven of the twelve words presented if it was announced to her beforehand that the list included names of tools. On the other hand, numerous substitutive paralexias were found in her performance: *India* is read *elephant*; *green*: she says she thinks of fruits; *fox* is read *rabbit* (adding that 'I first thought of an animal, then it seemed to read rabbit, then hens, finally a hen'). For the word *Goethe*, she said: 'it's about a man, a poet I already know I can't name Uhland, no Uhland! He belongs to the epoch between 1815–1850'. She spells G.A.L., pauses and writes 'it's Goethe'.

We also cite the observation reported by Cl. Faust (1955). Although the presence of aphasic symptoms no longer allows us to speak of 'pure' alexia, the type of reading disorders is similar to the observation of Beringer and Stein, as the author underlines himself. In effect, if the patient succeeds in reading only the first letter of a word, without even being able to join them afterwards, he has, on the other hand, some 'ideas' on the signification of the words. For the words Henri, André, Martin, he recognized that it was a question of surnames, and for the words table, chair, dresser, he cried: 'These are pieces of furniture.' On the contrary, short words, articles or prepositions are not read, while he succeeds sometimes in reading longer words.

In this type of alexia, simple orders are generally read, but with approximations.

As for complex orders, they give rise to partial apprehension with incertitude, one or two words being grasped vaguely, but the relations between the words remaining conjectural for the subject, or it might occur that one word is read for another and the object is then sought in vain. The reading of a text brings either complete failure or considerable paralexia, the sense of the text not being understood, in any case.

Copying seems to be more damaged in this group; it is often even almost impossible if not slavish. In spontaneous writing or dictation, distinct disturbances were found rather frequently, while the writing of dictated words is better, the writing of isolated figures is well realized, while errors occur when large numbers are involved.

Disturbances of the recognition of pictures and colors are as frequent as in the preceding variety. Some praxic difficulties and some somatognosic disorders may appear although not, usually, in a severe manner. Right, homonymous, lateral hemianopsia remains frequent, but it does not appear to be found constantly.

That which essentially characterizes this form, then, is the inability to read by spelling: even if two letters can be deciphered, the patient is often incapable of joining them into a syllable. On the other hand, a certain number of words are read, be it by the method of completing a word, once the beginning has been well identified, by approximation or by invention (*huit*: huisserie; *monarchie*: monastère; *village*: vivre), or by the patient's apprehension of the general signification of the words (*hôpital*: docteur, malade ...), or a close graphic form is recognized in the word presented (*hôpital* is read habitat). Readings which are graphically very distant, and even some which are only distantly related semantically, are witnessed: *Italie* read république; *Indes* read éléphant; *père*: le stage; etc. ...

Quite similar paralexic aspects have been noted in cases where it is impossible to speak of 'pure' alexia because of the presence of some disturbances of spoken language. Thus Marshall and Newcombe (1966) have given a qualitative and quantitative analysis of paralexias in a patient suffering from a left temporo-parietal traumatic lesion with slight disturbances of oral language and writing.

The errors can be grouped in a selective manner as a function of the grammatical class of the words presented: total failure was much more frequent for adjectives and verbs than for nouns; functional words were only read exceptionally. Paralexic responses of semantic type clearly predominated for nouns, while 'visual responses' (for example, *next* for *exit*) and visual completion (e.g., *gentleman* for *gentle*) were relatively predominant for adjectives and verbs. In addition, in the incorrect responses, no matter what the paradigmatic class or the paralexic type, a strong tendency towards responding by a noun was noted. The semantic errors went 'from pure synonymity to cases where the stimulus word and the response error had only one or two "semantic markers" in common' ('*sick*' read for '*ill*', '*historic*' for '*ancient*', '*town*' for '*city*', '*bush*' for '*tree*', '*animals*' for '*cattle*', '*laugh*' for '*cheer*', '*liar*' for '*bad*').

Marshall and Newcombe propose an interpretation of these types of reading disorders based on the theory of Fodor and Katz: 'the process of reading aloud may thus be seen as retrieving the full dictionary entry associated with the visual configuration,

and encoding this specification into the appropriate phonological form.' In the absence of disturbances of comprehension, as was the case with their patient, total failure would correspond to an inability to find a corresponding phonological form for each lexical entry. Semantic paralexias would be explained by a breakdown in the encoding process due to the inability to reach the distinguisher level.

Global alexia

The reading of letters and words is completely impossible with this, while the reading of figures and numbers remains intact.

It is in this form, typically represented by the classic observations of Charcot (1877) and Dejerine (1892), that compensation by kinesthetic channel of the disturbance of the identification of letters by visual channel, would appear to be the most frequent. As Charcot and Westphal had already noted, these patients were able to read some letters and even some words, by tracing the contours of the letter with their finger, or if the examiner draws the form of the letter in the air with the patient's finger.

Spontaneous writing or dictation remains normal, although control is not possible. A particular disorganization of the script can appear in some cases: slanting of the lines downwards and from left to right, fragmentation of the line with isolated letters or letters divided into small groups, iterations of letters, brusque disjunctions in ascending order between two words inside of a word, a tendency to go beyond the right and lower limits of the page. Copying can only be completely slavish.

Some difficulties with arithmetical operations are often noted.

In Charcot and Dejerine's patients, there was no other disorder of visual recognition, Dejerine's patient being able to recognize the signification of the letters R.F. if they were inserted in a cartouch. However, a number of authors, in particular Pötzl (1928), and Stengel (1948), have insisted on the association between this type of alexia and agnosia for colors. Right, homonymous, lateral hemianopsia is constant.

Although for H. Hécaen verbal alexia, literal alexia and global alexia each appeared to present structural characteristics which distinguished them from one another, he insists on the fact that a certain number of common traits unites them as a group: conservation of reading strategy, absence of disorders of spoken language other than a certain impairment of naming, integrity of spelling, and relative conservation of spontaneous and dictated writing. The presence of distinctions at the heart of this homogeneous group of disorders may depend upon anatomical conditions, but may just as well depend on the part played in the disturbance by a certain number of factors involved in the act of reading (perceptivo-motor factor, spatial organization, oculomotricity, structural factors in written language or in the type of script, factors of reading acquisition).

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MATHEMATICAL LINGUISTICS IN EUROPE

SOLOMON MARCUS

Since volume 1 of *Current Trends in Linguistics* appeared when mathematical linguistics was at the beginning of its development, and concerned only the Soviet Union, we shall try to present in the following some aspects of the most important works in European mathematical linguistics. We want to direct our main attention to those papers which effectively use mathematical methods in linguistic problems. In the spirit of the present volume, we shall keep the focus on Western Europe. In presenting Eastern European mathematical linguistics, those important aspects will be stressed which were not treated in vol. 1 of this series — *Current Trends in Linguistics*: *Soviet and East European Linguistics* — or in some other works such as: W. Plath, "Mathematical linguistics" (1961); Ferenc Papp, *Mathematical linguistics in the Soviet Union* (1966a); F. Kiefer, *Mathematical linguistics in Eastern Europe* (1968a).

We may remark from the beginning that the development of mathematical linguistics in Europe is characterized by a great variety of subjects and methods, in contrast to American mathematical linguistics, which is concerned almost exclusively with the algebraic theory of generative grammars. Thus, the picture of European mathematical linguistics is very significant for what mathematical linguistics is today.

Among the various facts which explain this situation, we recall here only two: 1) The numerous structural differences between various European languages; 2) The variety of traditions concerning mathematical methods in European linguistics. As concerns 1), we note that if such languages as English, having very few morphological features, may be well enough investigated by generative grammars alone, other languages, such as Slavic languages, require not only generative methods (which stress the syntactic aspects of languages), but some methods for investigating paradigmatic aspects as well. This is perhaps the reason for Šaumjan's theory of an applicational generative model for the description of language. Romance languages, by their complex structure, require a great variety of mathematical methods. As concerns 2), we want to recall some European forerunners of mathematical linguistics such as S. Lesniewski, "Grundzüge eines neuen Systems der Grundlagen der Mathematik" (1929), Rudolf Carnap, *Logische Syntax der Sprache* (1934), and K. Ajdukiewicz, "Die syntaktische Konnexität" (1935), who offer a point of departure in some modern mathematical theories of syntax such as the calculus of syntactic types of Lambek, the categorial grammars of Bar-Hillel, Gaifman and Shamir, and in some

approaches to the problem of connections between syntax and semantics; A.A. Markov, who at the beginning of our century pointed out the rôle of probabilistic models in the study of language; Pius Servien, who in the fourth decade of our century gave a coherent quantitative theory of rhythm (*Les rythmes comme introduction physique à l'esthétique*, 1930) and developed a formal theory concerning scientific language and poetic language (*Le langage des sciences*, 1931). By his work, Pius Servien was a precursor of mathematical poetics, in the sense in which it was developed by A.N. Kolmogorov in his work concerning applications of information theory to the study of rhythm and by other scientists, whose work will be discussed later.

The ampleness of the development of mathematical linguistics in Europe is well reflected by the great number of congresses, conferences and symposia, the numerous journals and books devoted to this field.

The list of congresses, conferences and symposia held in Austria, Czechoslovakia, France, Germany, Hungary, Italy, Romania, Sweden, the Soviet Union, and other countries is too long to be presented here. We wish only to mention the very important Conference on Formal Languages held in September 1964 (Baden-Wien, Austria) and to point out the large place occupied by mathematical methods in the communications presented at the 10th International Congress of Linguists (Bucharest, August 1967), despite the fact that no special section of this Congress was devoted to mathematical linguistics. A great number of journals are dedicated to mathematical and computational linguistics: *The Prague Bulletin of Mathematical Linguistics* and *Prague Studies in Mathematical Linguistics* in Czechoslovakia; *Etudes de linguistique appliquée* and *La traduction automatique*, which was replaced several years ago by *t.a. informations*, in France; *Sprache im technischen Zeitalter* and *Beiträge zur Linguistik und Informationsverarbeitung* in the Federal Republic of Germany; *Computational Linguistics* in Hungary; *Cahiers de linguistique théorique et appliquée* in Romania; *Mašinnyi Perevod i Prikladnaja Lingvistika* and *Naučno-Texničeskaja informacija* in the Soviet Union; *SMIL* (*Statistical Methods in Linguistics*) in Sweden, and others. Many papers devoted to mathematical linguistics can be found in various journals of mathematics, linguistics and cybernetics such as *Mathematical Systems Theory* published by Springer Verlag, *Kybernetika*, *Slovo a Slovesnost*, *Jazykovedný Časopis*, *Cecoslovackij Matematičeskij Žurnal* (Czechoslovakia), *Langages* (especially the issue dedicated to the relations between linguistics and logic), *La linguistique*, *Cahiers de lexicologie*, *Comptes rendus de l'Académie des sciences de Paris* (France), *Zeitschrift für mathematische Logik und Grundlagen der Mathematik*, *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* and *Studia Grammatica* (German Democratic Republic), *Linguistics* and *Foundations of Language* (Holland), *Journal of Linguistics* (England), *Acta Linguistica Academia Scientiarum Hungaricae* and *Acta Mathematica Academiae Scientiarum Hungaricae* (Hungary), *Bulletin de l'Académie Polonaise des Sciences* (Poland), *Revue roumaine de mathématiques pures et appliquées*, *Revue roumaine de linguistique*, *Bulletin mathématique de la Société des sciences mathématiques de la R.S. Romania*, *Studii şi Cercetări Matematice*, *Studii şi*

Cercetări Lingvistice, *Cercetări Lingvistice*, *Limba Română* (Romania), *Voprosy Jazykoznanija*, *Kibernetika* (Kiev), *Problemy Kibernetiki*, *Strukturnotipologičskie Issledovanie*, *Problemy Strukturnoj Lingvistiki* (Soviet Union). Some review journals have special sections dedicated to mathematical linguistics. We find such sections in *Bulletin signalétique* (France), *Linguistics* (Holland), *Referativnyj Žurnal-Matematika*, *Referativnyj Žurnal-Kibernetika* — under the title 'Mathematical problems of Semiotics' — and *Referativnyj Žurnal-Naučnaja i Texničeskaja Informacija* (Soviet Union). In the German journal of reviews *Zentralblatt für Mathematik und ihre Grenzgebiete* papers in mathematical linguistics are reviewed in the section 'Mathematical Logic', in 'Applications of Statistics' and, lately, in the section 'Practical Analysis', too. Many European papers and books on mathematical linguistics are reviewed in the section of 'Mathematical Logic' and in that of 'Communication and Information Theory' of the American journal *Mathematical Reviews* and in the section 'Humanities Applications' of *Computing Reviews*. The *Linguistic Bibliography* published every year by the Permanent International Committee of Linguists (Utrecht-Anvers, Spectrum) has a special section given over to mathematical linguistics.

Many textbooks and monographs are dedicated to mathematical linguistics. This is partly due to the fact that mathematical linguistics has become an object of teaching in many European universities. Chronologically, the first of these books is perhaps that of G.U. Yule, *The statistical study of literary vocabulary* (1944), which even now, after a quarter of a century, keeps its value and actuality.

In 1954 there appeared in France the book of Pierre Guiraud, *Les caractères statistiques du vocabulaire*, which proposes a great number of parameters and formulas in order to measure some statistical features of vocabulary, with special applications to the study of poetic language. Although some of these parameters and formulas are contestable from a mathematical point of view, and although the author himself does not agree now with his former conception, we must point out the interesting ideas of this book and their great popularity among linguists. In the same year, 1954, Guiraud published the *Bibliographie critique de la statistique linguistique*. This last is very significant for the strong development of statistical methods in linguistics, much more so than before the Second World War. But, in fact, it was an elementary approach to statistical methods. The mathematical theory of probability was used in linguistics only after the Second World War. The next book is that of Vitold Belevitch, *Langage des machines et langage humain* (1956). An important idea developed in this work is that of the very stong connection and parallelism between the binarism in linguistics and the binarism in mathematical machines. In the light of this analogy, Belevitch treats such topics as Boolean functions, information and codes, binary features and phonemes. In a certain sense, the theme is continued by the next important book, that of L. Apostel, B. Mandelbrot, and A. Morf, *Logique, langage et théorie de l'information* (1957), where the theory of linguistic oppositions, introduced by N.S. Trubetzkoy and J. Cantineau, is reconsidered from the point of view of the theory of codes, due to R.W. Hamming. The notion of a distance between

two words of a code is for the first time used here in problems concerning natural languages. In the same book, some interesting analogies between thermodynamics and linguistics are developed. We note here that in the last years the notion of informational energy — introduced by Onicescu — was applied in Romania to the study of language. We may say that the Second Principle of Thermodynamics has its informational and linguistic correspondent.

Many books and papers concerning statistical methods have been published in the last twelve years. Among the first and the most important are the contributions of B. Mandelbrot (for instance, "Structure formelle des textes et communication" [1954]), who gives a penetrating improvement and justification of Zipf's law. Some authors, such as H. Spang-Hanssen (1958, 1959) try to establish a connection between the structural and the quantitative point of view. But this claim is still now far from being fulfilled. Most of the structuralists despise quantitative methods, whereas most statisticians ignore structural aspects both in linguistics and in mathematics. Very significant in this respect are the discussions at the Strasbourg Conference, published in *Statistique et analyse linguistique* (1966). One of the most important efforts developed in this direction is that of the late Gustav Herdan, from the University of Bristol, England, who in a series of books tried and, in many respects, succeeded in combining structural and statistical linguistics. In his first book, *Language as choice and chance*, published in 1956, the foundation was laid for a truly sensible application of statistics to language, in Herdan's interpretation of the *langue-parole* dichotomy as being essentially that between statistical universe and sample. His following books are *Type-token mathematics* (1960), *The calculus of linguistic observations* (1962), and *Quantitative linguistics* (1964a). Among the numerous contributions contained in these books we mention the critical discussion of Zipf's law, which is rejected by Herdan, although other authors — such as Laura Gotusso (1963) as a mathematician and R. M. Frumkina (1964 and in some papers in *Voprosy Jazykoznanija*) as a linguist — try to substantiate this law or to establish the exact conditions of its validity. Another important contribution of Herdan is his retort to the book of Alvar Ellegård, *A statistical method for determining authorship* (1962). Herdan holds in this respect a very dim view — see the corresponding chapter in his book *Quantitative linguistics* (1964a) and Herdan's review of Ellegård's book (1964b).

But the most important of Herdan's contributions is his last book, *The advanced theory of language as choice and chance* (1966), which is a critical synthesis of all his conceptions. As Herdan himself says in the preface to this book, the dictum of the *langue-parole* dichotomy as corresponding to that between statistical universe and random samples is true only for the smallest elements of language, phonemes and letters, for which, however, the Saussurian dichotomy was not meant. On the other hand, in the case of the dichotomy of vocabulary in a running text and in the dictionary, which is what Saussure had in mind, a certain modification is necessary if the condition for random sampling from a statistical universe is to be fulfilled. In order to satisfy the condition for a sensible application of statistics also on the vocabulary

level, Herdan thinks that before applying random sampling on this level, one must prepare the ground by random partitioning, that is, by securing indistinguishability of segments as well as of elements. In the light of the last book of Herdan, we can speak of a quantification of the Saussurian *langue-parole* dichotomy, in the sense that *parole* can be regarded as a random sample of *langue*.

Among other works in statistical linguistics we wish to mention here: the work of H. Sommers, *Analyse mathématique du langage: lois générales et mesures statistiques* (1959); the book of Pierre Guiraud, *Problèmes et méthodes de la statistique linguistique* (1960); the books of Charles Muller, *Essai de statistique lexicale: L'Illusion comique de Pierre Corneille* (1964), *Etude de statistique lexicale: Le vocabulaire du théâtre de Corneille* (1967), and especially *Initiation à la statistique linguistique* (1968), which is the first book where methods of mathematical statistics are carefully explained for linguists; Björn Collinder, *Sprachwissenschaft und Wahrscheinlichkeit* (1964); *Mathematik und Dichtung* (1965), where many studies are concerned with statistical methods in poetics; Alexandra Roceric-Alexandrescu, *Fono-statistica limbii române* (1968), and several books of R. G. Piotrovskij, among them *Modelirovanie fonologičeskix sistem i metody ix sravnenija* (1966), and the book edited by him, *Statistika reči* (1968). But many other names must be mentioned as authors of interesting studies in statistical linguistics: M. Weiss in Sweden, W. Skalmowski and Witold Mańczak in Poland, S.J. Petöfi and E. Vertés in Hungary, B. Trnka, M. Těšitelova, M. Ludvikova, M. Königova, J. Krámský, J. Horecký, K. Buzassyova, J. Bosák in Czechoslovakia, G. Bolocan, V. Şuteu, I. Stan, S. Golopenţia and T. Pavel in Romania, W. Fuchs, E. Zwirner and K. Zwirner in Germany, D. Hérault, R. Moreau, E. Evrard in France. Information theory — especially the notion of entropy — was successfully used in linguistics by L. Doležel and F. Žitek in Czechoslovakia, W. Meyer-Eppler and K. Küpfmüller in Germany, R. Manfrino in Italy, Edmond Nicolau in Romania. In this respect, we mention the book of Jagjit Singh, *Great ideas in information theory, language and cybernetics* (1966), and R.G. Piotrovskij, *Informacionnye izmerenija jazyka* (1968). The problem of frequency dictionaries has been investigated for almost a century. Among the latest studies we mention the above-cited book of Frumkina and the work of S. Gamberini, G. de Conte, E. Patrone and G. Vaccarone, *Studi per un vocabulario delle frequenze* (1967). Many authors, though not always effectively concerned with probabilistic methods, make interesting reflections on applying these methods in linguistics. We mention in this respect the papers of M. Cohen, J. Dubois, G. Gougenheim, Louis Guilbert, A.J. Greimas, B. Pottier in France, Y. Lebrun in Belgium, Eugenio Coseriu (who gives some very persuasive arguments against glottochronology) and G. Ungeheuer in the German Federal Republic, M. Ivić in Yugoslavia, R.M. Frumkina, E.V. Padučeva, N.D. Andreev, L.R. Zinder, V.N. Toporov, I.I. Revzin and Ju.A. Šreider in the Soviet Union, Al. Roceric-Alexandrescu and S. Marcus in Romania, H. Karlgren and B. Malmberg (with his interesting survey "Méthodes statistiques et mathématiques de la linguistique: Théorie de l'information", in Malmberg 1966:278–304) in Sweden, L. Doležel, O.

Leška and A. Kurinskij in Czechoslovakia. Theoretical motivations for the use of statistics in the study of phonological data were already given by Karl Bühler, whereas Louis Hjelmlev ("Neue Wege der Experimentalphonetik", 1938) and V. Mathesius showed that every qualitative description must be completed by a quantitative research.

Great effort has been made in order to subordinate the application of probabilistic methods to the modern theory of formal languages and generative grammars. An interesting attempt in this respect is the work of Daniel Hérault and René Moreau, "La linguistique quantitative" (1966), where structural mathematical linguistics and quantitative (especially probabilistic) mathematical linguistics are described not as two opposite fields, but as two complementary fields. Unfortunately, very few practical works take this point of view into consideration. Jean-Paul Benzécri (1963a) goes further on, by trying to build a theory whose purpose it is to regulate the use of words, with their functions, in various contexts, a theory which more than Chomsky's theory takes into consideration large contexts. But in Benzécri's opinion, the grammar we need in such a theory is not a purely logical construction, as Chomsky has it; such a grammar needs an important branch of mathematical statistics: factorial analysis. Another important point in Benzécri's conception, which follows from the preceding one, is his conviction that a modern theory of grammar must use not only discrete mathematics, but continuous mathematics as well. This use may eliminate some inconvenient aspects of Chomskian grammars, for instance the large number of results of undecidable character (in the sense of mathematical logic). The theory of continuous and probabilistic automata, developed in recent years, is an argument in favor of Benzécri's conception.

Information theory is discussed in connection with structural linguistics by Bertil Malmberg in his important book *Structural linguistics and human communication* (1965).

When we speak of quantitative linguistics, special mention must be made of the use of some numerical parameters without always taking into consideration the probabilistic aspect. Such parameters are used both in paradigmatic and in syntagmatic analysis of language. Ju.I. Levin (1964) and V.A. Moskovič (1965) developed the paradigmatic analysis of a class of objects with respect to a finite set of features, with many applications in phonological, morphological, and semantic analysis. Such a type of analysis is sometimes focused on non-numerical aspects; for instance, Ferenc Kiefer (1966a, 1967a) is concerned with paradigmatic analysis with respect to a finite set of semantic categories, in order to show that — by defining various semantic relations between words — similarity is a basic semantic relation because most of the other semantic relations can be traced back to it.

An important problem in which both deterministic and probabilistic methods are used is that of measuring the functional load and the functional burdening of a phonological opposition. This is a mixed problem, in which both paradigmatic and syntagmatic, deterministic and probabilistic aspects are involved. Beginning with

V. Mathesius (1931), many authors have been concerned with this problem: G. Gougenheim (1935); Bertil Malmberg (1942–43); Knud Togeby (1952); André Martinet (1955); Gustav Herdan (1958); Pierre Guiraud (1960:97–105); Martin Kloster Jensen (1961); Giuseppe Francescato (1962); Jörgen Rischel (1962); Andrei Avram (1964); Emilio Alarcos Llorach (1965); Robert D. King (1967); W.S.Y. Wang (1967); Ferran Palau Martí (1968).

The deterministic syntagmatic quantitative analysis may be developed at each level of linguistic analysis, but it has been performed especially at the phonological level, by such works as those of Bengt Sigurd ("Rank order of consonants established by distributional criteria", 1955), Lars Gårding ("Relations and order", 1955), Emanuel Vasiliu ("Une classification des consonnes roumaines d'après le critère de la distribution", 1957). A general and modern treatment of syntagmatic linguistic analysis, concerning both quantity and order, has been given by Benny Brodda and Hans Karlgren ("Relative positions of elements in linguistic strings", 1964). Here we wish to mention the work of L. Nebeský and P. Sgall (1964), where a system of axioms is constructed for the description of the form-function relation between units of different levels of the language system. But with the last two papers we have transcended quantitative analysis, by penetrating into structural mathematics.

Before concluding the presentation of quantitative methods in linguistics, we want to say a few words concerning an interesting paper by Pavel Novák, "Two types of formulae in quantitative linguistics" (1964). This author gives significant examples of the complexity of relations between empirical and deductive aspects in quantitative linguistics and remarks that the main problem of the whole future development of quantitative linguistics is to turn attention to the command of classical linguistic problems, beginning perhaps with stylistics and typology.

We pass now to present structural mathematical methods in linguistics. Although mathematical methods, by their degree of abstraction, are often not related to a special linguistic level, we order the facts with respect to the linguistic level with which the considered mathematical model is mainly concerned.

Let us first consider the phonological level. In the 1960s many authors try to insert phonological analysis in the context of some chapters of modern mathematics. Following the ideas of N.S. Trubetzkoy, J. Cantineau critically reconsiders the various types of phonological oppositions and gives their description in the terms of symbolic logic (1955). Some types of Trubetzkoy's oppositions, such as gradual oppositions, are thus rejected, whereas others are modified. Cantineau's notions and results are further developed by S. Marcus, who introduces new types of oppositions and gives more attention to obtaining their properties in a deductive manner, by systematically using the notions and results of Set Theory (chapter I in Marcus 1967a). In fact, the logical theory of phonological oppositions may be applied to each level of linguistic analysis and this is effectively the case in various papers devoted to it; see, for instance, I.V. Arnold', "Oppozicii v semasiologii" (1966), and Roland Barthes, *Eléments de sémiologie* (1964). But some linguistic levels, such as the mor-

phemic one, need adaptation of the logical theory of oppositions to ORDERED sets of elements; this has been done in chapter III of the above-mentioned book of Marcus. Various logical problems concerning linguistic oppositions are discussed by: V.A. Vinogradov ("Nekotorye voprosy teorii fonologičeski oppozicii i neitralizacii", 1965); G. Orman ("Remarques sur la théorie logique des oppositions linguistiques", 1966), and "Quelques résultats concernant l'aspect logique des oppositions linguistiques" (forthcoming), and J.S. Stepanov ("Sintez lingvističeski napravlenij kak lingvističeskaja zadača", 1967).

The binary character of phonological features and oppositions, proved by Roman Jakobson and his collaborators, makes very natural the use of Boolean algebra in phonology. This has been performed by V. Belevitch in his above mentioned book and by Gerold Ungeheuer in the important paper "Das logische Fundament binärer Phonemklassifikationen" (1959). The latter author gives a representation of the German consonant system as a part of the Boolean algebra generated by eight sets of phonemes adequately chosen. The corresponding Hasse diagram has four levels, the level of rank i ($1 \leqslant i \leqslant 4$) being formed by those consonants which are characterized by i properties. Such a kind of representation was proposed by Viggo Brøndal (1936, 1943), who outlined the possibility of obtaining a hierarchy of phonemes following the number of elements which occur in their representation. By using the articulatory features *back*, *front*, *high* and *low*, Brøndal gives a symbolic representation of the vocalic system, as a part of the Boolean algebra generated by the considered four phonological properties. Thus, we must agree with Ungeheuer in considering Brøndal as the first scientist who introduced an algebraic point of view in the classification of vowels.

Another possibility, which is in fact equivalent to the above method of Brøndal and Ungeheuer, uses the theory of binary codes and is well illustrated by the above mentioned book of Apostel, Mandelbrot and Morf. In fact, every representation of phonemes as sets of binary features yields a binary code the words of which are the phonemes, whereas the length of each word is equal to the number of phonological features considered.

Various authors use geometric representations of phonological features. Very consistent in this respect is A. P. Evdošenko (1963, 1967), who, by means of analytical geometry, gives very suggestive descriptions of phonological aspects.

One of the most powerful tools of investigation in phonology is Graph Theory, especially by its so-called fundamental numbers such as the chromatic number, the cyclomatic number and the number of internal (external) stability of a graph. This method permits us to elucidate the combinatorial aspects of phonemes and to describe in a suggestive manner the phonemic redundancy of language. In this way, Marcus and Vasiliu (1960) and C. Câşlaru (1965) investigated the consonant groups of Romanian, whereas Torben Vestergaard (1967) made a similar investigation for Danish. The same method was applied to other linguistic levels by Jan Horecký, who describes the morphemic structure of the Slovak language (1964) and by Emese

Kis, Ioana Anghel and Elena Comsulea (1966a, 1966b) for Romanian at the syntactic level. Thus may be seen how graph theory helps to a better understanding of the isomorphism between various linguistic levels.

The works presented until this point take the phonemes as given and try to describe them a posteriori and to investigate their various kinds of combinations, their positional aspects. But the notion of a phoneme itself was the object of some logical and algebraic models. Leonard Bloomfield (in 1926) and Bernard Bloch (in 1948) were perhaps the first who tried to obtain an axiomatic description of phonemic analysis, but their investigation, although rich in suggestions, is far from the rigour of contemporary mathematics. J. H. Greenberg, in America, gives in 1959 an axiomatization of the phonologic aspect of language, but a prompt retort is given by Tadeusz Batog ("Critical remarks on Greenberg's axiomatic phonology", 1961a). The latter is the author of an important paper (1961b) in which he tries to apply Lesniewski's mereology in order to obtain a detailed reconstruction of the logical process which leads to the notion of a phoneme (see also Batog 1967). Batog's point of departure is the very complex reality of speech and, in this respect, his investigation is similar to another one, that by Jan W. F. Mulder. Mulder uses the algebra of sets, relations and graphs in order to obtain an axiomatic approach to the description of speech ("Some operations with sets in language", 1965 and, especially, his book *Sets and relations in phonology*, 1968).

It is well known that there are two main conceptions of the phoneme. Following Roman Jakobson and others, the phoneme is conceived as a set of binary distinctive features, whereas following Z. S. Harris, C. Hockett and other representatives of descriptive linguistics, the phoneme is conceived as a class of segments of speech. According to these two conceptions, we have two kinds of algebraic models of the phoneme. Typical for the first conception is the model of Marcus 1967a: 46–60, whose components are: a set E of sounds, a set F of features, a partition P of F, a function f defined on E and having its values in the set of subsets of F, a set A of finite sequences of sounds and an equivalence relation R in A (synonymy relation). Two features which belong to the same term of P are *homogeneous* (such as *voiceless* and *voiced*). For every sound s, $f(s)$ is the set of features of s. Given a sound s, it is requested that each term of P contains one and only one feature of s. The elements of A are the *marked* (correct) *sequences* of language; two sequences in A are *R-equivalent* if and only if they have the same meaning. The aim of the model is to show how one can select from $f(s)$ those features which define the phoneme associated with the sound s. Very significant improvements of this model are due to I. I. Revzin (1964, 1967a) and to Ladislav Nebeský (1966a, 1966b). Among other attempts to describe the logical aspect of distinctive features in phonology, we mention: V. N. Beloozerov ("Formal'noe opredelenie fonemy", 1964), R. G. Piotrovskij ("Ešče o differencial'ny priznaka fonemy", 1960, "Pis'mo v redakciju", 1963, and in his above-mentioned book, 1966 and O. S. Širokov "Binarnoe diferentory i modelirovanija fonologičeski sistem", 1965).

Concerning the second phonological conception, that due to descriptive linguistics, a typical illustration is the algebraic model proposed by Stig Kanger (1964). This model consists of the following components: A set S of abstract sounds, the set $E(S)$ of finite sequences of sounds, a subset $F(S)$ of $E(S)$, the elements of which are the marked sequences, and a congruence relation R in $E(S)$, with respect to which $F(S)$ is closed. The restriction of R to $F(S)$ is interpreted as a synonymy relation. The basic further notions are that of *variation* and *generalized variation.* The variation relation is a congruence relation in $E(S)$, with respect to which $F(S)$ is closed. The variation relation corresponds to free variation, whereas the generalized variation relation covers some cases of complementary distribution too. The notion of a *base* of the *phonologic system* $\langle E(S), F(S), R\rangle$ is further defined; the minimal bases are *phonemic bases.* If a phonemic base is finite, its elements are called *phonemes.* Problems of existence and uniqueness of a phonemic base are further considered. An improvement of this model was given by Marcus (1965a); see also his 1966 paper, where a synthetic view of various phonological models is given. Another purely algebraic model of the phoneme, which has as its point of departure the same ideas of Harris, Hockett and Gleason, is due to V.A. Uspenskij (1964).

We cannot end the presentation of mathematical models in phonology without saying a few words on some interesting, but in some sense isolated papers which appeared recently. G.F. Meier tries to establish a connection between phonology and cybernetics (1963). László A. Arany (1967) discusses some general problems of axiomatic phonology, but unfortunately without taking into consideration the contributions of other authors. Interesting mathematical contributions may be found in the 'Theses of Reports' presented at the Conference on Structural Linguistics devoted to basic problems of phonology (Moscow, March 20–23, 1963).

We now pass to the morphological level. By morphological problems we shall understand problems concerning morphemic analysis (segmentation, classification of morphemes), morphological categories (paradigm, part of speech, case, gender etc.), morphologic homonymy and linguistic typology. Of course, all these problems involve syntactic aspects too, but these syntactic aspects will be limited to a few basic notions of distributional linguistic analysis, such as context, distributional class, and various types of distribution.

Concerning morphemic analysis we have only a few words to say; this is a field which seems to be among the most difficult from the point of view of mathematical models. If we can today speak of an axiomatic phonology or an axiomatic syntax, we cannot speak of an axiomatic description of the morpheme. Two attempts will be mentioned in this respect: S. Abraham and F. Kiefer, "An algorithmic definition of the morpheme" (1965) and Marcus (the third chapter in 1967a). Some suggestions may be found in Viktor Krupa ("Morféma ako lingvistiká jednotka", 1964). An attempt to define in a formal, but not mathematical manner various kinds of morphemes may be found in Wolfgang Motsch ("Zur Stellung der Wortbildung in einem formalen Sprachmodell", 1962). We can say more for those mathematical studies which con-

sider the morphemes as given and are concerned with the structure of their combinations. In this respect we mention the contributions of I.L. Bratčikov (1963), B. Dömölki and F. Kiefer, S.I. Fitialov (1961), and D. Varga (1963).

An attempt of a special nature is due to Otto Sechser (1967). This author develops a mathematical morphology applicable not only to natural languages but also — and especially — to artificial sign systems, e.g. information languages. Such concepts as word, morpheme, etc. are conceived as more general than in natural languages. The whole theory is based on Hjelmslev's conception. Form segments, form units, meaning segments and meaning units are submitted to an algebraic and probabilistic investigation.

The algebraic notion of a morphologic (grammatical) category was investigated successively by R.L. Dobrušin, A. Sestier (1961), I.I. Revzin (1967a) and S. Marcus (the fifth chapter of 1967a). The basic relation in all these studies is that of domination. A string x dominates a string y if each context admitted by x is admitted by y too; this means, from a linguistic point of view, that the morphological homonymy of x is not greater than that of y. The morphological category generated by a set A of strings is the union of A with the set of all strings dominated by every string in A. Almost all morphological categories of natural languages may be described by algebraic morphological categories. The algebraic theory of domination relation and morphological categories has in the last years had a very rich development. We mention the contributions of Brian H. Mayoh (1966), C.V. Crăciun (1965, 1968a); Ladislav Nebeský (1965), Constantin Raischi and C. Tănăsescu (1967).

The basic notion in Sestier's approach is that of contextual closure. Given a set A of strings, let us denote by $C(A)$ the set of contexts which admit every string in A and by $F(C(A))$ the set of strings which are admitted by every context in $C(A)$. We call the set $F(C(A))$ the Sestier closure of A. If A is a distributional class, then the Sestier closure of A coincides with the morphological category generated by A. In the general case, the morphological category generated by A is contained in the Sestier closure of A, but the inverse inclusion is not true. Every Sestier closure is a morphological category, but not conversely. For these results and for many others concerning connections between morphological categories and Sestier closures, see: S. Marcus (1967b), E. Toma Marcu (1967), C. Crăciun (1968b).

An interesting contribution concerning Sestier closures is due to Jürgen Kunze, who introduces a generalization of the domination relation in the following way: The set A of strings dominates (in the sense of Kunze) the set B if $C(A)$ is contained in $C(B)$. (We recall that A dominates B in the customary sense if every element in A dominates every element in B). The idea of Kunze's research is the simple but fruitful remark that Sestier's closure of a set A is obtained from A by adding to A the union of those sets of strings which are dominated, in the sense of Kunze, by the set A. The definition of Sestier closure becomes similar to that of morphological category. Thus, all considerations concerning morphological categories may be transposed to Sestier's closures, by replacing the customary domination relation with Kunze's domination

relation. These remarks are very profitable in the study of German morphology, because some morphological categories of German are better described by means of Sestier closures than by means of categories proposed by Dobrušin and Marcus. For all these facts see Kunze (1967–68); Kunze and Priess (1968); Marcus (1969).

Some concrete morphological categories are the object of special algebraic investigations. The model of the part of speech was studied by V.A. Uspenskij in 1957 and continued by Marcus (1967c: III). The same model was used by T. Tobias in the study of parts of speech in the Estonian language (1962). Set-theoretical methods were used by Georges van Hout in the investigation of the French article (1968).

Various algebraic models of grammatical genders were proposed by Marcus (1967c: IV, and forthcoming), I.I. Revzin (1965a), O.P. Karpinskaja (1966), and A.V. Gladkij in a paper to appear in *Actes du X-ème Congrès international des linguistes*. Marcus' model was applied in the study of genders in Western Slavic languages by Jan Horecký (1966).

The first algebraic model of grammatical case was proposed by A.N. Kolmogorov and V.A. Uspenskij in the year 1957. The development of this model was undertaken by Marcus (1967a: VI) and I.I. Revzin (1965b, 1967a).

Linguistic typology is especially concerned with some morphological restrictions. The corresponding mathematical models are obtained by adding to the domination relation a paradigmatic structure, under the form of a partition of the vocabulary of language. The various types of connections which are possible between this partition, on the one side, and the distributional classes on the other yield a hierarchy of linguistic typologies, the study of which was initiated by O.S. Kulagina in 1958 and continued by I.I. Revzin (1967a), and in his book *Modeli jazyka* published in 1962, in the French edition (with many improvements) of this book, *Les modèles linguistiques* (1967b), and in "Some means for investigating amorphous languages" (1967c). Marcus (1967c: II), Brian H. Mayoh (1967), Bohdan Zelinka, "Un langage adéquat non-homogène, dont les classes sont disjointes deux à deux" (1965a), "Sur le *PS*-isomorphisme des langues" (1966a), "Sur le *P*-isomorphisme et le *S*-isomorphisme des langues homogènes" (1966b), "Sur les langages absolument bien adéquats" (1967a), "Un langage héréditaire qui n'est pas à un nombre d'états fini" (1967b), "Opérations sur les modèles analytiques de langages" (1965b), "Sur les langages absolument non-adéquats" (1968). Many of these works contain valuable applications to the typology of natural languages.

Various relations between the plane of expression and the plane of content, inspired by the Saussure-Hjelmslev conception of language, were described by means of both set-theoretical and information-theoretical methods. Thus, the morphemes conceived as elements of the plane of content, their correspondents in the plane of expression and the derived problems concerning morphological homonymy are treated by Marcus (1961) and especially by František Žitek: "Quelques remarques au sujet de l'entropie de tchèque", (1964a, "Aplikace matematiky v lingistice a některé jejich dětské nemoci" (1964b), "Sur certains problèmes combinatoires et leurs applica-

tions" (1965). The latter author introduces two species of entropy by means of which he obtains a very fine measure of morphological homonymy, as one can see with some examples selected from Czech, Latin and German.

Before proceeding to the syntactic level, let us mention some works having an intermediate character between paradigmatic and syntagmatic aspects. We have in view algebraic contextual analysis, in which some natural classes of contexts are defined, some relations between contexts — among them some metric relations — and some operations with contexts are studied. Typical in this respect are such works as: Ladislav Nebeský, "K ponjatiju konteksta" (1967), Alexandru Dincă, "Sur quelques problèmes d'analyse contextuelle métrique" (1968), S. Marcus, "Analyse contextuelle" (1965b).

Syntax is the linguistic level most suitable to be described by mathematical methods. We begin by presenting the mathematical model of syntagms. Then we pass to syntactic types, and categorial grammars, dependence and subordination, syntactic projectivity, generative and transformational grammars.

There are many notions in the literature which express the fact that some groups of words (or morphemes) may behave, in some contexts, as a single word. Thus, we recall the notions of syntagm, constituent and construction. The notion of configuration, introduced by Kulagina in 1958, is none of these, but it has something in common with each of them. It permits us to detect, by a recursive procedure, various degrees of syntactic dependence. This is obtained by defining various degrees of configurations. A restriction in the definition of configuration was introduced by A. V. Gladkij ("Lekcii po matematičeskoj lingvistike dlja studentov N.G.U.") (1966a). The same author established some connections between configurations and generative grammars and introduced the notion of a quasiconfiguration, in order to describe the so-called discontinuous constituents and the coordination relations. Kulagina's configurations are presented, with many critical remarks concerning the applicability to natural languages, by Ferenc Kiefer in his two books *Matematikai nyelvészeti tanulmániok* (1964a) and *Mathematical linguistics in Eastern Europe* (1968a). Among the most important contributions to the theory of configurations we must mention the papers of Miroslav Novotný, "Über endlich charakterisierbare Sprachen" (1966a and, in an extended form, 1965a), and "Algebraic structures of mathematical linguistics" (1968). The notion of configuration introduced by Novotný differs from both Kulagina's and Gladkij's definitions; following Novotný, the string y which is the result of a configuration x may not be an element of the vocabulary of language, being subject only to the condition that its length be smaller then the length of x. This fact enables Novotný's configurations to cover a large variety of syntactic situations. Some special problems concerning Kulagina's and Novotný's configurations, such as establishing the configurations of the union of two languages when we know the configurations of both considered languages or the problem of configurations of infinite order were investigated by Cornel Câşlaru in "Configuraţiile reuniunii a două limbaje" (1967) and "Configuraţii de ordin infinit" (1969). A general view on syntactic

configurations and some new properties of them are given by Marcus in chapter V of his 1967c book. French illustrations of all notions concerning Kulagina's model are given by P. Braffort (1960).

The syntactic calculus of Bar-Hillel and Lambek and the corresponding categorial grammars were studied in Europe by several authors. It is known that Bar-Hillel and Lambek have outlined a syntactical description where the syntactical category symbols are written as fractions and where the analysis of a given sentence is performed according to rules very similar to common arithmetical reduction of fraction expressions with factors that cancel out. Are there algorithms for applying such a calculus to normally complex natural language structures? An answer is given by Hans Karlgren, who seeks out a formal recognition procedure that enables us to decide for any given sequence of elements from a given language whether or not the sequence is grammatical ("The slant grammar calculus", 1967). In another paper ("Unique labelling", 1968a), Hans Karlgren considers a categorial grammar given in the form of a set S of categories and a list L of statements of the type $a.b \rightarrow c$, where a, b, and c are categories in S; he seeks an algorithm for assigning, if possible, one label to each category in such a way that a' being the label for the category a and so on, a' and b' cancel to c' if and only if $a.b \rightarrow c$. A presentation of Lambek's syntactic calculus with the aid of the Theory of Categories was given by Ana Burghelea (1967). An algebraic definition of the syntagm, which is based on Lambek's syntactic calculus, was proposed by Alexandru Cărăuşu (1967). Liliana Ionescu has given some Romanian illustrations of Lambek's types (1965), whereas L. Uhlířová discusses some aspects of word order in categorial grammars (1966).

In close connection with the categorial grammars are the dependency grammars, initiated by D. G. Hays. Many contributions are due, in this respect, to some Soviet authors, such as A. A. Gladkij, in his above mentioned book (1966a), S. Ja. Fitialov and M. I. Beleckij in some papers published in *Problemy strukturnoj lingvistiki 1967* (Moskva 1968, p. 71–102 and p. 46–70), E. V. Padučeva and L. N. Iordanskaja in some papers published in *Voprosy Jazykoznanija*. Purely mathematical aspects are investigated by M. I. Beleckij in some papers published in the years 1967 and 1968 in *Kibernetika* (Kiev).

Various contributions concern the axiomatic description of the dependence relation and the subordination relation (in contrast to the configurational method, which is a constructive way to obtain the dependence relations). Ladislav Nebeský has proposed a method for analysis of the subordination relation which uses some semantic aspects (1962). As I. I. Revzin has pointed out (1963), one can remove the reference to semantics and obtain a more formalized description. This remark suggested to Nebeský a new and more general description of syntactic subordination (1964).

Customarily the subordination relation is defined as the transitive closure of a dependence relation. There is another approach due to M. I. Beleckij, V. M. Grigorjan and I. D. Zaslavskij (1963), who define the subordination relation by means of a system of axioms; then, as a derived notion, one obtains the dependence relation. An

interpretation of this description by means of Graph Theory was given by Marcus ("Sur une description axiomatique des liens syntaxiques", 1965c). Dependence structures were also used by Klaus Baumgärtner ("Spracherklärung mit den Mitteln der Abhängigkeitsstruktur", 1965). Some algebraic aspects of the dependence structures were investigated by Y. Lecerf (1961) and Maurice Gross (1964a). The latter author has been concerned with dependency systems viewed as generative grammars, and studied, via Gaifman, the relations between these systems and phrase structure systems. The mathematical format of dependency structure and the possibility of mapping dependency structure stemmas and constituent structure trees, or bracketings of their terminal elements into each other are discussed by Klaus Baumgärtner (1965).

In close connection with dependence structures, we must discuss two syntactic problems: Yngve's depth hypothesis and projectivity.

Yngve's hypothesis concerns the depth of regressive syntactic structures such as *Very clearly projected pictures appeared.* This hypothesis states that much of the syntactic complexity of a natural language can be understood in terms of memory restriction. But Yngve's investigation concerns only English, although his hypothesis is extended to all languages. This gap was partially removed by Deneš Varga ("Yngve's hypothesis and some problems of the mechanical analysis", 1964), Ferenc Papp ("On the depth of Hungarian sentences", 1966b) and E. V. Padučeva ("O svjaza glubinu po Yngve so strukturoĭ derava podčinenii", 1966).

The concept of syntactic projectivity was introduced by Y. Lecerf and P. Ihm ("Eléments pour une grammaire générale des langues projectives", 1960). A string $a_1 a_2 \ldots a_n$ is said to be projective if from the fact that a term a_i is subordinated to a term a_j it follows that every intermediate term is subordinated to a_j. In this definition, the subordination relation is understood as the transitive closure of the dependence relation, the latter being considered as given. The projectivity of a string in a natural language is in some sense equivalent to the absence of discontinuous immediate constituents. But continuity of immediate constituents and projectivity are not reducible one to the other. They are two aspects of the same syntactic mechanism. A synthesis of these two aspects is given by the so-called 'modèle des conflits' (Lecerf 1960). Various particular types of projectivity and their mutual relations were investigated by Marcus (1965d). An algebraic analysis of a projectivity criterion of Lecerf and Ihm was made by P. Camion (1960). A hierarchy of more general projectivity types has been investigated by Ju. A. Šreider (1964).

In view of the relatively large number of non-projective sentences, various generalizations and modifications of projectivity conditions were proposed. In this respect, we mention the works of L. Hirschberg (1961), Irina Lynch (1961), N. E. Kareva (1965). A deep analysis of the projectivity concept in connection with the syntactic structures of English and German was developed by Jürgen Kunze (1967).

The automatic syntactic analysis is frequently done within the framework of a geometrical representation. In this respect, the strings whose graph of dependencies is a proper tree are very important. These strings have a connected graph without

cycles, having at least two vertices and having a vertex *a* such that for any other vertex *b* there exists a path starting in *a* and arriving in *b*. In such a string there is a center, i.e. a term which depends upon no other term, but each other term of the string is subordinated in a unique way to the center. These strings are called *simple strings*. The notion of a simple string owes its origin to Lucien Tesnière (1959), the first author who systematically used geometric representations in the study of syntax. A simple string is a model of first approximation of the classical syntactic notion of sentence. The center of a simple string corresponds to the predicative element of a sentence. As Lecerf and Ihm (1960) showed, the projectivity of a simple string may be characterized by purely geometrical means, through orthogonal projections of the vertices of the associated proper tree on a straight line situated in the plane of the tree. This characterization justifies the use of the word PROJECTIVE. The problem of finding geometric characterizations of other types of projectivity and of the projectivity of non-simple strings was investigated by Margareta Mihalyi (1968). The same author gives some conditions under which a string, projective in the sense of Lecerf-Ihm, is projective in the sense of Šreider — and conversely. The study of the dependence graph associated with a simple projective string was made by V.V. Firsov ("On isometric immersion of a graph in the Boolean cube", 1965f) and Dušan Pospišil ("On a linearization of projective *W*-trees", 1966).

Another type of geometric representation in syntax uses the theory of lattices and was initiated by A.F. Parker-Rhodes. In his paper "The lattice properties of syntactic relations in an open language" (1961) the basic terms used are *substituent* (replacing the term *constituent*, which has a slightly different meaning) and *paradigm*, which means the overall set of uses of a given substituent. It is shown that the set of all the paradigms possible in a language form a lattice; the ordering-relation in this lattice is that of set-inclusion, the paradigms having been defined, with this in view, as sets of occurrences of the substituents to which they refer. In another paper, by Parker-Rhodes and Masterman ("The derivation of syntactic relations from a lattice model", 1961), the argument is reversed: using logical rather than linguistic considerations, a general model of syntactic structure is set up. A subject-predicate distinction is developed and different syntactic functions are defined and related, by being placed in a simple lattice. A classification of groups into endocentric and exocentric is constructed, and components of groups are qualified as governors or dependents. Algorithms arising out of the lattice model for finding the functions of compound groups from those of their components are given. The lattice model was further developed by obtaining applications to programming syntactic analysis with a digital computer; see, for instance, Parker-Rhodes, Wood, Kay and Bratley, "The Cambridge Language Research Unit Computer Program for syntactic analysis" (1961).

A long list of works are dedicated to algorithmic descriptions of some syntactic problems and to various formal systems which have some analogies with the syntax of natural languages. In this respect, we mention: Bernard Vauquois (1962); B. Dömölki (1964, 1966); A. Caracciolo di Forino (1960); W. Vollmerhaus (1966); Jürgen Eickel

(1967); D. Varga (1968); A. Hoppe (1964) and numerous papers published in: *Beiträge zur Sprachkunde und Informationsverarbeitung*, now *Beiträge zur Linguistik und Informationsverarbeitung* (Oldenbourg Verlag, München); *Kybernetika* (Prague); *Information Storage and Retrieval* (England); *Problemy Kibernetiki* (Moskow); Aldo Ghizzetti (ed.), *Automatic translation of languages* (1966); *Erstes Kolloquium über Syntax natürlicher Sprachen und Datenverarbeitung*, Saarbrücken, 29–30 April 1963, unter Mitwirkung von Hansjakob Seiler und Paul O. Sammelsdorff, herausgegeben von Hans Eggers (Franz Steiner Verlag, Wiesbaden, 1964); *Zweites Kolloquium über Syntax natürlicher Sprachen und Datenverarbeitung*, Oberwolfach, 28–29 Juni 1965, herausgegeben von Klaus Detering und Herbert Pilch (Franz Steiner Verlag, Wiesbaden, 1966); IFIP-Working Conference Symbol Manipulation Languages, Pisa, 5–9 September, 1966; 2ème Conférence Internationale sur le traitement automatique des langues, Grenoble 23–25 août 1967; the *Reports* of Centre National de la Recherche Scientifique-Centre d'études pour la traduction automatique, St-Martin-d'Hères, Isère, France; the *Reports* of the Research Group for Quantitative Linguistics (Stockholm). It is also interesting to note that in *Taschenbuch der Nachrichtenverarbeitung* (herausgegeben von Dr. Ing. K. Steinbuch; Springer-Verlag, Berlin-Heidelberg-New York, 1967) paragraph 8 of Chapter 10, entitled 'Automatische Verarbeitung natürlicher und formaler Sprachen' is dedicated in its major part to formal and algorithmic aspects of syntax. In the same order of ideas we can mention some books concerning information retrieval, where various syntactic models are needed: B.C. Vickery, *On retrieval system theory* (1961); A. Deweze, *Traitement de l'information linguistique par l'homme et par la machine* (1966), M. Coyaud and N. Siot-Decauville, *L'analyse automatique des documents* (1967); R.C. Cros, J.G. Gardin and F. Lévy *L'automatisation des recherches documentaires. Un modèle général Le Syntol* (1968).

Some algebraic aspects of syntax at the level of text were investigated by W.L. Fischer (1965–66) and Ju. A. Šreider (1966a). Interesting remarks concerning syntactic complexity, in connection with syntagms, configurations and Yngve's hypothesis are made by Jean-Marie Waaub (1968).

Many European contributions to the study of syntax concern the mathematical theory of generative and transformational grammars. We shall consider successively the four most important types of grammars: finite state, context free, context sensitive and transformational grammars.

In the field of finite state grammars, Karel Čulik (1961) gives a characterization of finite state languages by means of graph theory. He associates to every finite state grammar a finite oriented labelled graph and then proves that a language L is a finite state language if and only if there exists a finite oriented labelled graph which generates L. Marcus gives an intrinsic characterization of finite state languages by means of the notion of a derived partition, introduced by Kulagina in the set-theoretical model of language. The same author (1964, 1965e) corrects a criterion of Chomsky which permits us to recognize whether an infinite language is a finite state language. The intrinsic study of finite state languages, i.e. the study of these languages without using

grammars or automata, has been pursued by Ion Filotti ("Direct proofs for some theorems concerning finite state languages", 1967). A remark concerning the use of finite state grammars in phonology is due to S. Abraham and V. Slimac ("Phonology and Kleene-grammars", 1966). Quasi-uniform events and quasi-uniform chain automata and the multi-tape automaton are investigated by G. Rozenberg (1967a, 1967b, 1968).

Many interesting extensions of finite state grammars and languages have been proposed lately. M.P. Schützenberger considered a special type of finite transducers (1961). Arto Salomaa (1965) showed that in a 2-state probabilistic automaton considered by M. Rabin the event represented by the non-initial state is regular if and only if the cut-point is rational. V. Amar and G. Putzolu (1964, 1965) introduced the notion of a symmetric linear grammar (in which every terminal rule has the form $B \to z$, and every non-terminal rule has the form $C \to xAy$, where A, B and C belong to the non-terminal vocabulary, whereas x, y and z are terminal strings, and x and y have the same length). They show that the languages generated by symmetric linear grammars may be characterized in an intrinsic manner, by means of an extension of the congruence relation used in the well-known theorem of Rabin and Scott. Every finite state language may be generated by a symmetric linear grammar, but the converse is not true. One of the most interesting extensions of finite state languages has been given by Pair and Quere in "Définition et étude des bilangages réguliers" (1968). A bilanguage is, in some sense, a 'bidimensional language', since it is a set of labelled graphs of the type of tree structures used in the theory of formal grammars. The regular bilanguages are the bidimensional correspondents of the finite state languages. Jaroslav Král gives an extension of finite automata and studies some set-theoretic properties of the languages corresponding to this extension ("Set-theoretical operations of K-multiple languages", 1967). Another extension of finite state languages has been presented by Andrzej Blikle at the International Conference of Formal Linguistics (Aiguilles, France, September 1968).

The most important European contribution to the theory of context free grammars and languages is undoubtedly due to M.P. Schützenberger. He is the co-author, with Chomsky, of the basic study concerning this type of languages ("The algebraic theory of context free languages", 1963). His contribution concerns problems of ambiguity, of decidability, push-down automata (whose generative power is the same as that of context free grammars) and some special classes of context free languages. (See, among others, Schützenberger 1964, 1967.) Push-down automata have also been investigated by Jacob Mey (1965) and especially by Claude Pair, in his book *Étude de la notion de pile; application à l'analyse syntaxique* (1966). A systematic use of push-down automata in the study of a natural language is due to P. Sgall, who tries to interweave methods of generative grammars with some ideas of Lamb's stratificational grammars ("Generative description of language and the Czech declension", 1966a and a corresponding book in Czech; "Generative Beschreibung und die Ebenen des Sprachsystems", 1966b; "Ein mehrstufiges generatives System", 1966c; "Generation,

production, and translation", 1968). Jozef Gruška ("On sets generated by context free grammars", 1966a) introduced a special class of context free languages L characterized by the existence of a context free grammar G such that L is the set of all terminal strings generated from at least one non-terminal symbol in G. In another paper (1967), he proved that, even for alphabets with only two terminal symbols, for every positive integer n there exists a context free language that is not generated by a context free grammar with less than n non-terminal symbols. Also, it is shown that for an alphabet with only one terminal symbol, every context free language is generated by a context free grammar with two non-terminal symbols, but there exists a context free language that is not generated by a context free grammar with one non-terminal symbol. Hans Karlgren (1968b) considers a finite sample of strings assumed to be generated by a recursive context free phrase structure grammar and forms hypotheses concerning the design of that grammar. Questions of ambiguity were investigated by Maurice Gross (1964b), Vaclav Fabian (1964) and Jozef Gruška (1965a, 1966b). Categorial grammars (equivalent to context free grammars) were investigated from the point of view of ambiguity by Ferenc Kiefer (1967b). The same author dealt with the non-concordance between context free grammars and natural languages (1966b).

Several works concern various extensions of phrase structure grammars. Irena Bellert ("Relational phrase structure grammar and its tentative applications", 1965; "Relational phrase structure grammar applied to Mohawk constructions", 1966) introduced a formal system which may be interpreted as a generative grammar. The system, which is referred to as a relational grammar, is compared with a simple phrase structure grammar and examples are given of a relational grammar for languages that have no simple phrase structure grammars. Applications are given to the generation of Polish kernel sentences and to certain constructions of Mohawk, which cannot be generated by customary phrase structure grammars. Walter Vollmerhaus (1967) is the author of a new method of syntactic analysis of natural languages, by considering a finite sequence of Chomsky grammars which are successive approximations of the German language. A generalization of phrase structure grammars was also considered by E. D. Stockij. In this grammar, derivations are restricted by a derivation control device, which is another phrase structure grammar (see his papers in *Naučno-Texničeskaja Informacija*, the last of which is "Porožd ajuščie grammatiki i upravlenie vyvodom", 1968). The notion of a language of derivations for a given grammar G was introduced by G. Rozenberg (1967c), who proved the existence of a context sensitive (but not always context free) grammar for such a language in the case when G is a context free or a context sensitive grammar. S. Abraham developed the study of a new type of generative grammars: the matrix grammars. Such grammars are obtained by adding to a context free grammar a finite set of matrix rules, i.e. of finite ordered sets belonging to the context free grammar. To apply a matrix rule to a string x means to apply all the context free rules which form it, to x, in the given order (Abraham 1965, 1968). An extension of matrix grammars, obtained by associating to every type

of generative grammar a corresponding phrase structure grammar, was given by J.P. Benzécri (1967a). A further generalization is due to the same author (1967b).

The formal theory of non-connected constituents of manipulations was initiated by Jean Paul Benzécri (1963b). The algebraic framework of that paper was inspired by the 'algèbres types' (J. Benabou 1966). A detailed explanation of what can be linguistically relevant was then written by Benzécri under the shape of a programming manual (1967c). Programs were actually written by H. Vandenburgh (1965), who has produced an English version of his own, of the whole theory. A short paper giving linguistic applications, namely the manipulations of connected constituents required to handle in a tree-like fashion Chomsky's transformations for English verbal modes, is due to J.P. Benzécri (1966a).

The first systematic study of context sensitive languages including operations, decidability problems and various other questions is that of Jean Friant (1967). The same author (1969) studied the generation of prime numbers, by proving that their set is a context sensitive, but not context free language. A shorter proof of Friant's result was obtained by Benny Brodda ("A variant of the Friant grammar for generating prime numbers", 1969). The general grammatical aspects of number names, conceived from a generative viewpoint, was the object of a book by H. Brandt Corstius (1968). Combinations between categorial and context sensitive grammars were investigated by Ferenc Kiefer ("The possibility and/or necessity of *CS*-rules in categorial grammar", 1968b). A class of grammars which are intermediate between context free and context sensitive, the so-called 'grammaires context free à peigne' was studied by Jean Friant (1967) and by R.D. Guedj ("Grammaires de constituants généraux", 1966). The latter author has also given algebraic theorems generalizing Chomsky-Schützenberger's noncommutative formal series to the case of 'grammaires context free à peigne'. In this respect, more general results are obtained by J. Roubaud ("Quelques propriétés de la syntaxe dans les types d'Algèbres complètes à une dimension", 1966). Applications to the description of programming languages are studied by P. Leroy. A general frame for considering programs operating on symbols and examples which show how far the parallelism actually exists between various linguistic and operational structures were given by J.P. Benzécri (1966b).

In most of the above mentioned works published by J.P. Benzécri and his collaborators, algebraic topology and the theory of categories are used essentially. The same tool has been used in many other papers concerning syntax, generative grammars and semantics: Irena Bellert and Wacław Zawadowski, "Preliminary attempt at outlining a system of linguistic signs in terms of the theory of categories" (1967); J.P. Benzécri, "La catégorie des simplexes segmentés et ses applications au traitement des constituents non-connexes en linguistique mathématique" (1967d); Ju.A. Šreider, "O kategornyx xarakteristikax jazykov" (1967).

A fundamentally new type of generative grammar having the logical structure of the non-linear abstract systems (called by H.B. Curry *ob systems*) has been given by S.K. Šaumjan ("Outline of the applicational generative model for the description of

language", 1965a), in contrast to Chomsky's generative grammars, which have the logical structure of the so-called concatenative systems, in which formal objects are conceived as finite linear series, or strings, of symbols.

The syntax of programming languages was investigated by means of generative grammars and other formal devices by Karel Čulík, "Formal structure of ALGOL and simplification of its description" (1963a), "On equivalent and similar grammars of ALGOL-like languages" (1964), "On languages generated by some types of algorithms" (1966a); A. Caracciolo di Forino, "Linguistic problems in programming theory" (1965); Maurice Gross, "Linguistique mathématique et langages de programmation" (1963); György Révész, "An efficient syntactic analyser of certain formal languages" (1968); Jozef Gruška, "Induction in formal languages: Some properties of reducing transformations and of isolable sets" (1965b), "Structural unambiguity of ALGOL MOD" (1965c) and "Isolable and weakly isolable sets" (1966c). In the same area of research we mention: Helmut Schnelle, "Programmieren linguistischer Automaten" (1964), Silvio Ceccato, "Operational linguistics" (1965); Z. Pawlak, "Address-free computer with separate memory" (1960); A.J. Blikle, "Investigations in the theory of addressless computers" (1966a), and "Formalisation of parenthesis-free languages" (1966b); Benny Brodda and Hans Karlgren, "Citation index and measures of association in mechanized document retrieval" (1967); Benny Brodda, "The STRIP language — a string processing language for linguistics" (1967); Hans Karlgren, "An algorithm for forming a maximum class of mutually compatible elements out of a partially incompatible set" (1968); Gerhard Engelen, "Programming of reversible systems in computational linguistics" (1967). A good textbook concerning the mathematical theory of generative grammars is that of Maurice Gross and André Lentin (*Notions sur les grammaires formelles*, 1967), who carefully develop all the logical bases of formal grammars. A survey article concerning the same topics is due to L.A. Gusev and I.M. Smirnova (1968). Other contributions to the mathematical theory of generative grammars: M.V. Lomkovskaja, "Isčislenie, porožd̆ajuščee jadernye russkie predloženija" (1965–66); R. Kurki-Suonio, "On some formal grammars" (1964); Jürgen Eickel, "Lösung des Analyse- und Mehrdeutigkeitsproblems durch Überführung formaler Sprachen in sackgassenfreie formale Sprachen" (1967); Langmaak and Eickel, "Präzisierung der Begriffe Phrasenstruktur und strukturelle Mehrdeutigkeit in Chomsky-Sprachen" (1967); Claus Peter Schnorr, "Freie assoziative Systeme" (1967); Jean-François Perrot, "Sur la fermeture commutative des C-langages" (1967); Teodor Rus, "Tratarea algebrică a limbajelor formalizate" (1967).

Some mathematical approaches to transformational grammars have been proposed lately. Karel Čulík in "On some transformations in context free languages" (1967) describes a class of mathematically well defined mappings which meet all the linguistic requirements for transformations. The main requirement (expressed by Chomsky) is that the transformations are mappings — the domains and ranges of which are the sets of phrase-markers. With this aim, Čulík introduces a new definition of a phrase-marker (or of a structural description) which is independent of any

context free grammar, i.e. which does not make any use of the term *rule* and uses the terms of graph theory only, and which is acceptable from a linguistic point of view. Using that mathematical definition of phrase-marker, the reasoning leading to the considered class of mappings seems very natural. A mathematical definition of a transformation follows almost immediately from simple, purely mathematical requirements. We wish to mention that the same author has already published some axiomatizations of generative grammars (Čulík 1963b, 1965). A similar approach, but more adequate to the needs of mechanical translation, is due independently to Veillon, Veyrunes and Vauquois ("Un métalangage de grammaires transformationnelles", 1967), who by means of graph theory define some transformations of tree structures. Some remarks concerning the algebraic aspect of this description are made by J.P. Benzécri (1967c). A quite different approach is that of E.D. Stockij (1967), who suggests a refinement of the notions of transformation and transformational grammar. The generative power of transformational grammars is investigated, as well as their shortcomings. In the same article an attempt at defining the concept of meaning in transformational terms is analyzed and the role of transformations in semantic analysis is outlined.

Various generative devices have been proposed which are not of the Chomsky type. We mention: Ladislav Nebeský, "The ξ-grammar" (1966c), V.B. Borščev, "Okrestnostnye grammatiki" (1967), Miroslav Novotný, "Über endlich charakterisierbare Sprachen" (1965a), Ju.A. Šreider, "Topologičeskie modeli jazyka" (1968).

Very few are the mathematical investigations concerning the semantic level. We might mention: Margaret Masterman, "A theory of the semantic bases of human communication, applied to the phonetic of intonational form" (1962), Ju.A. Šreider, "On the semantic characteristics of information" (1965), Lydia Hirschberg, "L'utilisation de l'information sémantique pour le choix des unités lexicales" (1966), Nikolaj Savický, "O možnosteh matematického sémantiky přirozeného jazyka" (1966), Samuel Abraham and Ferenc Kiefer, *A theory of structural semantics* (1966), A. Baille and J. Rouault, "Un essai de formalisation de la sémantique des langues naturelles" (1966), Laszló Kálmár, "Semantika, sinonimija i perevod" (1967a), Arapov, Borščev and Šreider, "Jazyk, grammatika, semantika" (1967), Ferenc Kiefer, "Über Fragen einer formalen semantischen Theorie" (1966c), and "Outlines of a new approach to semantic similarity" (1969a), Emanuel Vasiliu, "Truth value and transformations" (1967) and forthcoming papers concerning the use of Carnap's meaning postulates.

The analytic approach to the mathematical models of language was the object of some basic investigations, in which modern algebraic structures were used to describe modern linguistic structures. Let us mention: Laszló Kálmár, "Le langage comme structure algébrique" (1967b), Miroslav Novotný, "Bemerkungen über ableitbare Sprachen" (1965b), "Bemerkungen über Homomorphismen von Sprachen" (1965d) and "On some algebraic concepts of mathematical linguistics" (1966b), Ladislav Nebeský, "Language systems" (1968), Andrzej Trybulec, "Ob odnom klasse sintak-

tičeskix otnošenij" (1967a) and "Razbienija slovnika v jazykax s zadannymi paradigmami" (1967b), Stephan-Ylan Solomon, "Homomorphism types and some of their applications in the models theory of algebraic linguistics" (1971) and "Lingvistică algebrică şi teoria modelelor" (1969). A new perspective in mathematical linguistics is offered by Šreider, "O variacionnyx principax v lingvistike" (1966b).

Poetic language is an important field for the application of mathematical methods, especially of probability and information theory. A significant illustration of this assertion are the books of Dieter Krallmann, *Statistische Methoden in der stilistischen Textanalyse* (1960), M.R. Mayenowa, *Poetyka i matematyka* (1965a), and H. Kreuzer and R. Gunzenhäuser, *Mathematik und Dichtung*, published in two editions (1965, 1967). We also mention in this respect the names of Abraham Moles in France, Max Bense in the Federal Republic of Germany, Lubomir Doležel in Czechoslovakia, M.R. Mayenowa in Poland, A.N. Kolmogorov in the Soviet Union, S.J. Petófi in Hungary. In recent times, logical and algebraic methods began to be used in poetics: A.J. Greimas, *Modelli semiologici* (1967), Julia Kristeva, "Poésie et négativité" (paper presented at the International Conference on Semiotics, Warsaw, 1968), some papers of Jerzy Pelc, and others. Abraham Moles is the author of an interesting study concerning information theory and rhythms, 'L'informatique des rythmes" (paper presented at the Conference on Rhythms, Lyon, 4–7 December, 1967); thus the old studies of Pius Servien (1930, 1931) on the quantitative aspect of rhythms are further developed. Following some ideas of Servien, Marcus (1968) developed algebraic and topological models concerning the opposition between scientific and poetic language.

The pathology of language is an important field of application of mathematical methods. Two examples: Arthur Holstein, "A statistical analysis of schizophrenic language" (1966); Fradis, Mihailescu and Voinescu, "L'entropie et l'énergie informationnelle de la langue roumaine parlée" (1967). But both these works concern statistical and information-theoretical methods. Many suggestions for the application of the theory of generative grammars in the study of the pathology of language may be found in Egon Weigl and Manfred Bierwisch, "Neuropsychology and linguistics: Topics of common research" (paper presented at the International Conference of Semiotics, Warsaw, 1968).

Recently, a new branch of mathematical linguistics has appeared: mathematical philology. Classic editorial science, with such problems as collation, filiation, conjecture, and index or concordance can be treated by means of graph theory, set theory, logic, statistics and computers. We can give a long list of works in this field, but let us mention only a few examples: M.W. Gall, "Die RAMAC und die Philologie" (1960). H. Geiss, "Aufgaben und Perspektiven der Arbeitsgruppe 'Minoische Texte' des Instituts für griechisch-römische Alterstumskunde" (1960), D.I. Froger "Emploi des machines électroniques dans les études médiévales" (1961a) and "La critique textuelle et la méthode des groupes fautifs" (1961b), H. Geiss, "Untersuchungen an Texten mit unbekannter Schrift und Sprache mittels Lochkarten" (1962),

Evreinov, Kosarev, *et al.*, "Vyčislitel'naja texnika v istoriko-filologičeskih issledovanijah" (1962), H. Preschek, "Die Technifizierung der Edition — Möglichkeiten und Grenzen" (1965). A general view concerning these problems has been given by Erich Mater, "Problems of mechanized text critique" (1968). The question of filiation has been solved by Dom J. Froger in his recent book *La critique des textes et son automatisation* (1968). An interesting paper is due to Gian Petro Zarri, "Linguistica algoritmica e meccanizzazione della collatio codicum" (1968). See also Enrico Maretti and Gian Petro Zarri, "L'art d'éditer les textes est-il mécanisable?" (paper presented to the 12th International Congress of Romance Linguistics and Philology, Bucharest, 15–20 April 1968). Concerning concordance, we mention Louis Delatte, "A propos d'une concordance" (1965). An important activity is developed in this field at the Laboratoire d'analyse statistique des langues anciennes de l'Université de Liège, Laboratoire d'analyse lexicographique, Université de Besançon, Le trésor de la langue française de Nancy, Komitee für maschinelle Informationsverarbeitung, Deutsche Akademie der Wissenschaften zu Berlin.

Linguistics is often considered a pilot science, whose basic structures are needed and utilized by many other sciences of Man and Society. This fact is natural, because language aspects are very general and basic and may be encountered in various sciences. Only two examples will be given here (see further Marcus in *CTL* 12, to appear). In his book *Grammatyka i matematyka*, Zdzislaw Pawlak (1964) discusses, in a chapter significantly entitled 'Genetic grammars', a parallelism between the formation of proteins and linguistic structures and the conceivable models of their respective formal description. In his paper already mentioned, concerning the context sensitive languages, Jean Friant (1967) shows that the celebrated problem of Fermat concerning the entire solutions of the equation $x^n + y^n = z^n$ may be reformulated in terms of languages. In both discussed problems generative grammars play an important rôle.

In view of the complexity of the problems posed by every interdisciplinary field, many works discuss some questions of general character concerning the origin, the meaning, the efficiency, and the perspectives of mathematical linguistics. We mention: J.P. Benzécri (1966c), Coumet, Ducrot and Gattegno (1966), Karel Čulík (1966b), A.V. Gladkij (1966b), Maurice Gross (1968), Jan Horecký (1965), Ferenc Kiefer (1964b), Kiefer and Abraham (1965), Giulio C. Lepschy, the chapter concerning mathematical linguistics in his book *La linguistica strutturale* (1966), M.V. Mačavariani (1964), Marcus, Nicolau and Stati, *Introducere în lingvistica matematică* (1966), Maria Renata Mayenowa (1967), I.I. Revzin (1965c), Helmut Schnelle (1966), Viliam Schwanzer (1967), Petr Sgall, *et al.* (1964), Harry Spitzbardt (1965), S.K. Šaumjan (1965b). See also in this respect, the Hungarian periodical *Általános nyelvészeti tanulmányok, a matematikai nyelvészet es a gépi forditás kérdései* edited by Lászlo Kálmár and Zsigmond Telegdi. Interesting works concerning the teaching of mathematical linguistics to linguists and the teaching of languages by means of mathematical structures are due to Yves Gentilhomme ("Les ensembles flous en linguistique", 1968,

"Utilisation des graphes morphologiques pour l'enseignement du russe", 1964). A textbook of mathematics dedicated to linguists was published by Miroslav Novotný (*Matematika pro lingvisty*, 1965d). An important activity in the teaching of mathematical linguistics is developed at the Centre de linguistique quantitative de l'Université de Paris, directed by Daniel Hérault, author of *Éléments de théorie moderne des probabilités* (1967). A good source of bibliographical information in mathematical linguistics is *Kvantitativní Lingvistika, Bibliography of Quantitative Linguistics* (Československa Akademie Ved, Ustav pro jazyk česky, Praha), published every year by Marie Těšitelová and her collaborators.

We end our presentation by remarking that European mathematical linguistics is well and homogeneously developed, but its further development may be more intensive if the following conditions are fulfilled:

a) A more balanced development of deterministic and probabilistic mathematical methods in the study of language and a closer connection between them;

b) A more balanced development of the study of natural and of artificial languages and a closer connection between them;

c) A more balanced development of analytical and generative linguistic models and a closer connection between them;

d) A greater attention to the linguistic structures which appear in various natural, humanistic, and social sciences; these structures may be the point of departure of some interesting mathematical models.

In the spirit of these desiderata we have tried to write the present survey article.

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MACHINE TRANSLATION IN WESTERN EUROPE: A SURVEY

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1. INTRODUCTION

Although work on machine translation in western Europe developed somewhat later than that in the Soviet Union and the United States, for a time it was equally prominent. Projects were undertaken in many countries. For some, i.e. Belgium, France, Germany, Great Britain, Italy and Sweden, at one time eight to fifteen research groups could be listed; for others, such as The Netherlands and Switzerland, fewer. Though some projects were carried out in close cooperation with projects in the United States, the greater part of the European research groups preserved their independence both with respect to linguistic theory and their methodology. In contrast with the American groups, which generally excluded the semantic component of language, the research groups at Cambridge, Milan, and Bonn took the semantic component into consideration. Moreover, while the larger research groups in the United States developed general analyzers that could process the grammar of any language, the research groups in western Europe, except that in Grenoble, developed language-dependent algorithms, which could process only a particular language.

Most of the European groups believed that high quality translation was not obtainable within a short time. Yet some set out to produce machine translation in a short time, reducing their requirements for quality. A few simply aimed to construct multilingual dictionaries for use in machine-aided translation.

These groups reacted variously to the report of the Automatic Language Processing Advisory Committee (ALPAC) of the National Research Council, which appeared in 1966. The report stated that large-scale support of machine translation research could not be justified on the grounds that machine translation was slower, less accurate, and more costly than that provided by human translators. Moreover, the report concluded that there had been no satisfactory machine translation of scientific texts and that none could be expected soon. On the other hand, the report recommended federal support for research and development for human and machine-aided trans-

[1] We wish to express our gratitude to Mr. Zbigniew Pankowicz of Rome Air Development Center, Griffiss Air Force Base, for information on the currently operating MT centers in western Europe. We also want to acknowledge Grant AF-AFOSR-1320-67 from the Air Force Office of Scientific Research which provided support for a review of activities in MT.

lation (National Academy of Sciences 1966). In response some European groups held that its conclusions were wrong (Hoppe 1967a); others concluded that its expectations were too great (Max Woitschach, of IBM-Deutschland in Gerwin 1967:11); others stated that the conclusions were based on false premises (Krollmann[2] 1967–68).

At approximately the same time as the report appeared, theoretical linguists began to deal with universal deep structures. Petrick had published his description of an algorithm that constructs for any transformational grammar with certain properties the corresponding surface grammar and reverse transformations (Petrick 1965). The effects of these developments on linguistic theory can be judged from a reappraisal of the possibility of machine translation (Schnelle 1967a).

The recommendations of ALPAC, however, had had a profound effect in Europe. Work in machine translation was sharply reduced. Many groups discontinued their activities because of lack of financial support. Some computational linguists began to direct their aims at non-practical goals. This effect was still apparent in the call for papers at the 1969 International Congress on Computational Linguistics, which disclaimed concern for 'problems within mechanical translation ... unless treated with linguistic methods' (whatever the implications of this qualification may be).

The European research groups which maintained their interest in machine translation cannot be classified as purely theoretical or practical; the theoretically-oriented LIMAS group at Bonn as well as the Centre d'Études de la Traduction Automatique (CETA) at Grenoble which has always held to practical achievements are both active. In a field whose theoretical bases develop rapidly, much of the older literature is dated; yet to provide a review of the general activities of the various groups in western Europe, statements will be made below about these as well as about the projects that are still in existence. It is too early to forecast what the prospects will be for further work, though in Germany interest and support seem to be increasing; and in France, CETA is continuing its activities, especially in the translation of Russian into French.

2. MT GROUPS USING SEMANTIC INFORMATION

Five research groups developed algorithms for translation by means of semantic information:

1. The Cambridge Language Research Unit (CLRU) at Cambridge, England;
2. Centro di Cibernetica e di Attività Linguistiche, University of Milan;
3. IDAMI Language Research Section, Istituto Documentazione della Associazione Meccanica Italiana, Milan, Italy;
4. Centre d'Études de la Traduction Automatique, Grenoble, France (CETA);
5. Forschungsgruppe LIMAS, Bonn, Germany.

[2] Krollmann is director of the Mannheim 'machine-aided translation' effort, 'a considerably brighter prospect' according to ALPAC.

We shall deal only briefly with the first three groups for they did not reach the operational stage, nor are they at present involved in MT. Each of these attempted to perform semantic analysis without prior syntactic analysis.

2.1 At CLRU the problem of translation was formulated as a word-by-word translation in which ambiguous words had to be disambiguated. This was to be done by two methods: a) Words were classified by means of a thesaurus. It was assumed that ambiguous words would have the same descriptors as their environment. b) An interlingua, resembling pidgin English, was produced. By means of this interlingua, co-occurring descriptors were to disambiguate ambiguous words. Both methods required the recognition of 'phrasings', groups of words containing two stress points. An algorithm for locating phrasings in written texts by computer was developed. The algorithm has not achieved the aims proposed for it. Research is now concentrated on the recognition of syntactic elements by means of a new method of parsing texts.

2.2 and 2.3 The two institutes at Milan based their work on the semantic theory of network correlation which was developed by Silvio Ceccato. According to this theory, any sentence of a language can be represented as a hierarchical system of correlations. A correlation consists of a correlator and two elements, each of which may in turn consist of a single nominatum, a correlation of two nominata, or a net of several correlations. A nominatum is the meaning of a word. A correlator is the relation that links the meaning of two words. A correlator can be expressed by means of words like PREPOSITIONS, CONJUNCTIONS and other particles, or it may be implicit, that is, expressed by an affix or by the position of words. Ceccato assumed that the number of correlators in language is relatively few, between 200 and 800. Further, that they are common to all languages. Any given relation may be expressed by different correlators; moreover, a correlator may express different relations.

Each word in the dictionary is either a nominatum or a correlator. For each nominatum information is provided concerning the correlator with which it may occur; similarly, for each correlator information is provided on the type of nominatum with which it may occur. When a correlation has been established, the new correlatum may function as a new nominatum. An algorithm was devised to indicate the correlators with which a correlatum may occur.

Ceccato's work at the Centro di Cibernetica was continued by Ernst von Glasersfeld at IDAMI. He succeeded in analyzing a few English sentences by reading in the dictionary cards of the words in a sentence in the order they occur in the sentence. In October 1966 the Language Research Group at IDAMI moved to Athens, Georgia, U.S.A. Analysis of Italian, however, has been continued at Milan by Professor Terzi.

2.4 The two other groups with a comprehensive approach, CETA in Grenoble and LIMAS in Bonn, from the start have projected schemes for translation. Each has formulated its view of the activities involved in translation and developed a plan for carrying out these activities.

CETA projects translation in three stages, and proposes to carry out these stages by drawing on various kinds of linguistic theory, dependency and transformational as well as phrase structure analysis. The stages viewed in translation are: a) Analysis of input sentences; b) interlingual mapping; and c) synthesis of output sentences. Analysis is handled in three steps, each of which deals with a posited stratum: 1. Dictionary lookup; 2. syntactic analysis and interpretation; 3. semantic analysis. Since these strata are viewed as a series of levels, the output of each analytic step is input at the next higher stratum.

In dictionary lookup, a sentence, which is the input for the lookup program, is processed by means of a dictionary containing words, word parts and endings. The units recognized are replaced by their identification numbers and assigned an interpretation. Lookup ends when each word has been interpreted.

The word interpretations are then processed by the first part of the syntactic analysis program; this program uses a subscript grammar. For a brief account of subscript grammars, see Harman's (1963) "Generative grammars without transformation rules: A defense of phrase structure".

The output, consisting of one or more binary trees, is then processed by a program which derives from each binary tree a corresponding dependency tree; see Tesnière (1959), who has written the most comprehensive dependency grammar, in which an excellent introduction to the theory can be found. Since the grammar can deal with some types of discontinuous constructions, the word order derived need not correspond with the word order of the text.

The dependency tree is thereupon analyzed at the semantic level, where words and their interpretations are processed with a semantic grammar by means of a transformational program. The resulting semantic tree, which is a dependency tree, displays the semantic relations that hold between any governing term and its dependent terms. It is translated into the corresponding structures of the output language. In this way the synthesis process is initiated.

Partial syntactic descriptions have been written for French, Russian, English and Japanese, and tested by computer. Although the segment of language dealt with is small, the experiments are of great interest for their versatile use of a variety of theoretical approaches. Computer output, which unfortunately has not been published, indicates remarkable translation capabilities for those languages, but notably Russian into French.

2.5 An approach totally different from those based on tree representations of sentences is being developed by the LIMAS research group at Bonn. From its inception, the LIMAS group emphasized semantic translation. Its descriptions of German and English accordingly incorporate semantic, as well as morphological and syntactic information.

As with other systems, translation is regarded as a three-stage process: analysis of input; matching; synthesis of output. Yet the LIMAS group is individual in its

assumption that any sentence of a language can be represented by a 'factor formula' in the metalanguage of that language (there are as many metalanguages as languages). A factor formula can be regarded as a sentence of a metalanguage. Although the words of the metalanguages are common to all metalanguages, the factor formulas normally are not.

Analysis in the LIMAS system seeks to establish the factor formula for a given sentence and to translate it into the corresponding factor formula of the target language. Analysis begins with lexical lookup, which assigns to words or word parts a syntactic interpretation by means of a dictionary containing semantic as well as syntactic information.

After lexical lookup, the syntactic relations between words and the constituents of the sentence are specified. A context program looks up the syntactic interpretations in matrices; prepositional phrases, for example, are given their proper interpretations in preposition-noun matrices.

This stage is considered the interpretation of the morpho-sphere (syntactic component). In a further, second stage, the interpretation of the nomo-sphere (semantic component), the semantic features attached to dictionary words and to syntactic interpretations are used to reduce the number of interpretations, and finally to derive the factor formula of the sentence. Individual 'words' of the factor formula can be found at any level of analysis and can be immediately incorporated into the formula.

Among semantic information attached to nouns is that for groups of persons, groups of animals, abstractness; among information attached to prepositions is that for location and reference. Since nouns are also classified according to features associated with prepositions, syntactically ambiguous sequences of prepositions and nouns can be reduced to their proper interpretation.

The rules of grammar are represented by matrices whose columns and rows represent individual syntactic symbols or combinations of such symbols. Context programs recognize the individual symbols and check the corresponding matrices to determine whether the combination found is permissible. If it is, they specify its interpretation.

Transformations are possible on each of the two levels, the morpho-sphere and nomo-sphere (terms used by LIMAS which correspond to 'syntactic and semantic components'), and between the two spheres. The transformational operations fall into four types:

TRANSITION: the factor formula of the input sentence is mapped into the same factor formula for the output sentence.

EXPLICATION: a semantic factor which has no morphemic representation is made explicit in the factor formula. The lack of representation can be due to such phenomena as ellipsis or non-expressed context relations; for example, German *Er schüttelte den Kopf* corresponds to *He shook his head.* Since the literal translation is *He shook the head,* an 'explication formula' is devised to secure the correct English output.

VERBALIZATION: the expression of a factor explicated in the source language.

REDUCTION is the opposite of explication: the semantic factor is not verbalized, but only implied on the morphological level.

If there is no identical factor formula in the target language, the factor formula of the input language will be subjected to transformations on the nomo-level until a match is found. Since the factor formulas contain an indication of the underlying syntactic structure, in addition to semantic information and data on relation between constituents, a match can eventually be found that corresponds closely to the syntactic input structure.

The LIMAS system is also designed to recognize and translate metaphorical usage, idioms and discontinuities. It is general, so that any number of languages can be added to the system without causing changes in the description of earlier languages. Yet it is still in the theoretical stage. No translations, except for a small experiment, have been performed. When the proposed linguistic descriptions are completed, hardware is to be designed for the individual matrices. If computer logic can be arranged in accordance with linguistic patterns, interpretations encountered during analysis will initiate searches whose results will indeed be found with the speed of light.

3. MT GROUPS USING SYNTACTIC INFORMATION

Three centers have been involved in mechanical translation by means of a language-dependent algorithm without using a semantic component:

1. The National Physical Laboratory, Teddington, Middlesex, England. The report by McDaniel and colleagues (1967) indicates that an MT system requiring post-editing from Russian to English was produced. The level of the output was favorably evaluated by W. L. Price (1967) in his article "Computer translation — is it worthwhile?" Further work, however, was discontinued through lack of support.

2. IBM-Deutschland, Sindelfingen, Germany, has produced an MT system for translating IBM manuals from English to German.

3. The Joint Nuclear Research Center, Ispra Establishment, Italy, Scientific Data Processing Center (CETIS) has been using the most sophisticated of language-dependent algorithms. The underlying theory is discussed more fully below.

In addition to these three centers a fourth may be in the process of establishment: the Deutsche Forschungsgemeinschaft (the German equivalent of the National Science Foundation) has sponsored a program to translate from Russian into German, which was developed by Peter Toma, formerly of the Georgetown Automatic Translation Group. Toma programmed the algorithm to analyze the Russian input; the program to produce the German output is being written at the University of Saarbrücken.

IBM-Deutschland and CETIS are continuing their research in MT, using in general the following theoretical approach.

Language-dependent algorithms like those used by these groups exhibit a similar logical structure. We shall give a short description of the most sophisticated of them, SLC (formerly for 'Simulated Linguistic Computer'), developed by A. Brown, who

began his work with the Georgetown Automatic Translation Group and then transferred his activities to Ispra. SLC is a general language processor which can be used to analyze various languages. It has been used for the translation of French into English. It may be called language-dependent because it processes grammatical statements which contain language-dependent programming operations. Originally produced for French-to-English translation, SLC has been developed into a general translation system for processing the text of any source language and translating it into an equivalent target language text after the necessary operations and grammatical descriptions have been carried out.

SLC permits the writing of operations necessary for analysis, translation, and synthesis of sentences as independent operations (sub-routines) which are executed only when they are listed in an 'item'. An item is the information furnished by the dictionary for each lexical element in a text. It consists of four types of information: the target language equivalent of a source language element (word or stem); an identification number of the source language element; codes to indicate syntactic and paradigmatic information; and optionally, instructions.

The instructions are the names of operations which must be executed during the translation of the sentence. An item may also contain a complete operation of its own, called local instruction. Local instructions cannot be referred to in other items.

When analysis is undertaken, every sentence is assigned a zero item as its leftmost 'word'; this zero item also functions as the last 'word' of the preceding sentence. It contains all the instructions necessary for analyzing any sentence in the language. Moreover, each instruction is assigned a priority number for its sequence of execution. An instruction can replace, delete or add items, codes or instructions; it can also rearrange items. Any instruction is removed from an item after it has been executed. When all instructions have been executed, the target language equivalents are printed out.

The programming algorithms are divided into two basic sections: the source language section, which analyzes the text to be translated, and the target language section, which synthesizes the target language, producing the translation.

Each section is sub-divided into sub-sections, or modules, which are determined by linguistic structures:

Programs dealing with word recognition and interpretation;

Programs called syntagmatic, dealing with phrase recognition;

Programs called syntactic, dealing with recognition of sentence structures, that is, with main and subordinate clauses and their syntactic elements.

Any of the modules may be modified, or used in various ways, without affecting others in the algorithm.

Moreover, because they are modular, these programs are not applied in a rigid order. Rather, individual parts of sub-sections are selected and used, to assure complete analyses of any given input and correspondingly complete syntheses of the output.

Since the syntactic programs scan a text and try to establish relations between

words which can be separated by a number of other words within a sentence, sentence boundaries must be recognized in order to prevent words in one sentence from being related to words in another.

Separation routines are essential in the language-dependent approaches to machine translation. They prevent mismatches across boundaries; they also economize on computer time by setting definite limitations to areas which are to be processed by subsequent syntactic operations.

After each word has been identified, and syntagmatic and syntactic analyses completed, one alternative is selected from among the English translation equivalents of a Russian word in the lexicon. This selection is based on the syntactic environment in which the Russian word occurs, and leads to the translation.

The procedure for carrying out translation consists of:

Synthesis, which provides the English equivalents of the Russian words and their proper inflections:

Word insertion, which inserts words into the English text which have no overt representation in Russian;

Rearrangement, which puts sentence elements into proper English word order.

For some time SLC has been used at Ispra. Recently it was acquired by the Atomic Energy Commission at Oak Ridge, Tennessee, and is used for in-house translations. (Translation cost at Oak Ridge is $7.30 to $13.00 for one thousand translated English words; the cost at Ispra is $4.55. In the ALPAC report the cost of 1,350 English words is given as $36.00 (Krollmann 2/1968:45).) In spite of the considerable difference in these figures, the Oak Ridge accounting system takes into consideration all costs, including key-punching of input material and computer costs.

4. MACHINE-AIDED TRANSLATION

Three organizations have recently started to perform machine-aided translation:

The Federal Armed Forces Translation Agency, Mannheim, Germany;

The Department of Terminology of the European Coal and Steel Authority (CECA);

Centre de Linguistique Automatique Appliquée, Free University of Brussels, Belgium.

In the Mannheim system, the human translator underlines the English words for which he needs the German equivalents. The underlined words are then punched by a key-punch operator in their canonical form. Three to four text-related glossaries can be produced by computer in ten minutes. These are then given to the human translator for his use in producing the final translation.

The other two systems contain sample sentences for a particular word and the various translation equivalents of the word in actual translated sentences. Whenever equivalents of a given word are requested the computer prints out the list of sentences in which this word occurs. The sentences are stored in five versions: French, German, Dutch, Italian and English. Sentence dictionaries with French and Dutch as input have already been established. Sentence dictionaries with German and Italian

were to be operating in 1966 according to *Current Research and Development in Scientific Documentation* No. 14.

5. PILOT STUDIES

Finally we may note a small number of research groups which seek to perform analysis or synthesis of natural languages with the aim of essential application to machine translation or machine-aided translation.

Bonn University, Institut für Phonetik und Kommunikationsforschung der Universität Bonn: Structural Analysis of German;

Freiburg University, Englisches Seminar: Automatic Analysis of English and Automatic Synthesis of English;

Köln University, Seminar für Vergleichende Sprachwissenschaft: Automatic Analysis of Hebrew;

Saarbrücken University, Germanistisches Institut, Institut für angewandte Mathematik: Analysis of German;

Belgium, Royal Museum of Central Africa: Syntactic Analysis of Bantu Grammar;

Netherlands, Netherlands Mathematics Center: Mechanical Linguistics.

With the possible exception of the last, these groups employ language-dependent algorithms; the groups at Köln and Freiburg started out with the intention of constructing general language processors.

The research group for quantitative linguistics (KVAL), Sweden, has concentrated on statistical investigation and mechanical syntactic analysis. It regards these as indispensable preliminaries to mechanical translation, but no direct mechanical translation project has been planned.

6. CONCLUSION

The groups which have maintained themselves in western Europe will probably continue their work. Their existence is not influenced by overly optimistic expectations nor by overly pessimistic conclusions with respect to their results. These groups are gradually increasing the scope of data to be processed so as to include more and more semantic and even factual information in their analysis procedures. These groups are gradually improving their control of MT and the quality of their output. Their confidence may be spreading, as one may assume from the recent publication *Computational linguistics at RAND* (Kay 1969).

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LANGUAGE TEACHING

PETER STREVENS

INTRODUCTION

The term LANGUAGE TEACHING embraces a great range of activities; these activities exhibit at any given time a number of different forms. For example the teaching of English to speakers of other languages is a different task if it is being carried out in a French lycée, a Swedish primary school, a Dutch technical college, or a 'reception' class in Huddersfield for the children of Pakistani immigrants. Roughly parallel differences exist in the teaching of French, or German, or Russian. Each different manifestation of language teaching is itself not an unchanging activity, yet the changes which occur differ in kind and in degree as between one form of language teaching and another.

This article does not attempt to describe (still less explain) all the changes which have taken place in all the different forms of language teaching in the whole of Europe. Nor does it set out to chart changes in methodology and classroom approach such as are embodied in (or obscured by) labels such as 'direct method', 'eclectic method', 'bi-lingual method' etc.: several excellent summaries of this kind exist already, notably that by Mackey (1965). Other useful summaries are to be found in Gauntlett (1957) and Harding (1967).

What this article sets out to do is to chart those general similarities in state and in change of state which seem to the author to be characteristic of the language teaching profession in the period 1920–70. The article will suggest that the time of the Second World War and shortly after it (say, 1940–50) represents a watershed; that before this period there had developed an orthodoxy which, although it contained within it a number of deviations and heresies, nevertheless represented a widely agreed position; that this orthodoxy was influenced by European linguistics of the time, in a small way and indirectly perhaps, but nonetheless discernibly; that major shifts in public attitudes towards foreign languages took place in 1940–50, resulting in new rôles and aims in language teaching; that developments in educational technology about this time, and especially in techniques for recording and reproducing speech, offered a new dimension to teaching just when command of the spoken language was becoming a central goal; that there arose a state of readiness for the impact of linguistics by the years 1955–60; that this impact was produced not by American structural linguistics

(backed by behaviourist, 'stimulus-response' psychology) as was happening in the United States, but by linguistic ideas out of the European tradition; that there is emerging in Europe an overall view of language-teaching as an amalgam of underlying disciplines, teaching methodology and technical aids; that the organisation of the profession now makes easier and more likely the incorporation of new ideas from linguistics and psychology; and that although these changes are still far from complete there are signs that a new, dynamic orthodoxy of language teaching is now replacing the old static orthodoxy of 1920–40.

One further group of comments is necessary by way of introduction. First, when one considers the teaching of languages in Europe, a small number of different teaching situations can be distinguished. For example, the teaching of foreign languages in schools and in higher education in Britain, France and Germany shares much in common; French and German are the two main languages taught in Britain, English and German in France, and English and French in Germany.[1] In these countries, foreign languages have traditionally been taught as part of literary studies to students in grammar schools, lycées or Gymnasien. But Britain and France each also possess a long-established large-scale industry for the teaching of English and French as a foreign language overseas: the German equivalent is of recent date and much smaller in scope. These teaching operations have their own special methodologies and attitudes, which have often been in advance of the general run of FLT practice.

Second, it is a commonplace observation in Europe that nationals of some countries demonstrate better language-learning performance on the average than nationals of other countries. Specifically, the Dutch, Danes, Norwegians and Swedes have this reputation. One can only speculate as to the reasons for this: it may be that the effectiveness of language teaching in those countries is superior; it may be that the circumstances of these countries gives a greater motivation, that Dutchmen and Scandinavians feel they NEED to acquire a foreign language (in practice, English) and so they actually do so; it may be that there is simply a tradition, a fashion, an automatic assumption, that this is within their capabilities; or it may be a combination of these factors.

Third, in addition to English, French and German, but on a relatively tiny scale compared with these three more popular languages, there exist organised facilities for teaching Russian, Spanish, Italian and Portuguese. Other languages, like Chinese, Arabic, Polish, Czech, Japanese, Hausa, Yoruba are available only as rarities or in highly specialised institutions such as the School of Oriental and African Studies of the University of London and its counterparts elsewhere.

Finally, the teaching of Classical Latin and Greek: this article deliberately excludes them from consideration on the grounds that their teaching takes place within a closed, specialised and shrinking framework. Quite apart from the special nature of the language being taught, the methods and aims of teaching the classical languages have been virtually unaffected by the developments which are the subject of this paper;

[1] In East Germany (DDR), as in Eastern Europe generally, the commonest languages taught in schools and colleges are Russian and English, in that order.

the teaching of Latin and Greek would require separate treatment which is outside our present scope.

THE ORTHODOXY OF 1920—40

The teaching of foreign languages in Europe during this period follows a common pattern. To begin with, languages were offered only to a small minority of the school population, it being believed that only the most intelligent and academically promising students could profit from FLT. Only those favoured children who reached the grammar school, lycée, Gymnasium or equivalent were allowed to learn a language, and in Britain even among this minority there was generally a choice to be made between specialising in Science subjects (which meant discontinuing or never starting a foreign language) and specialising in Arts subjects, where languages were available. Thus even those languages most commonly offered were accesible only to the academic few.

Those who learned languages were invariably taught them in the context of literary studies. The aim of learning French or German was to read La Fontaine, Voltaire, or Racine; or Schiller, Goethe or Hugo von Hofmannsthal. It was taken to be self-evident that literary texts enshrined all that was best and all that the student needed to know about the culture and civilization of France or Germany, and that this cultural acquaintance was adequate justification for teaching and learning the languages. Indeed, learning and teaching THE LANGUAGE was subordinate in many senses to the aim of reading works of literature.

The standards of practical achievement reached by the pupils who took a foreign language varied widely. In Britain, a common pattern was (and still is) to begin French at age 12 or 13 and to continue for 4 years at a rhythm of 3 or 4 classes per week. At age 16, an examination is taken which most pupils pass, but which only a small number pass with distinction. A few pupils, generally from among those who did well in a language at 16, would often continue to university studies in a language. These advanced students now represent only a tiny fraction even of that minority of the school population who entered the grammar school at age 12 or 13, but their standards of achievement were on the whole very good. On the other hand, the average standard of those who failed or barely passed at age 16 (the bulk, that is to say, of those who elected to take French) was lamentable. It seems that (to take the British situation as an example) the four initial years of French gave those who were 'linguistically able' a launching pad for further progress to reasonable competence; the others either never achieved an adequate practical grasp of the language or quickly lost it if they ever had it. But of course the acquaintance with literature which even the poor achievers had been given was held to justify the continuance of the system.

In the period up to 1940, this educational mechanism, or variations on it in different countries, produced sufficient numbers of people with sufficient command of languages to meet the needs of the teaching profession, government, industry and com-

merce, in Europe generally. National needs for foreign language competence were in any case very small compared with those of the present time. The countries of Europe had much less traffic with each other than is the case today. There were few international standing organisations; inter-government communications were rudimentary; the use of radio was still developing; television was not yet in regular use; trade and industry was less international in its nature; even science was more closely confined within national boundaries than it is in 1970. The grammar schools, lycées and Gymnasien of Europe provided, it would appear, a sufficient flow of trained intellects to feed the universities and to maintain the highest levels of government, trade and science — including an adequate number of people with foreign language competence. To sum up, in the period before 1940 language teaching was based primarily on literary studies and was available only to a small section of the educational élite.

The pre-war orthodoxy also extended to teaching methods, with two main approaches accounting for the great majority of FLT. The most widespread of these was the 'grammar-translation method', in which the teaching techniques rested upon two prime suppositions: first, that learning grammatical rules and exceptions was an effective device for teaching an accurate command of the language; and second, that translation into and out of the foreign language was the most important practical exercise for increasing experience of and competence in the language being learned. Grammar-translation continues to be the method used by very many teachers today, particularly by those who maintain the preoccupation with literary studies which was the core of the old orthodoxy. But in most European countries it is probably true that grammar-translation is regarded by the majority of teachers as being out-moded.

The grammar-translation technique was nearly universal in Europe in the period 1920–40 for the teaching of languages other than English; the English teaching tradition was markedly different. Here the label used in order to describe teaching methods was the 'oral approach'. As the label implies, this method makes use of the spoken language. In the early stages of learning, new material is introduced orally before being seen in written form; great importance is attached to classroom techniques for demonstrating pieces of language in situations where their meaning is self-evident or easily grasped, rather than needing to be looked up in a dictionary and glossed by the teacher.

The oral approach was the product of a long tradition of English language teaching going back to Henry Sweet, but resting above all on two sources of inspiration and teaching materials. These were, first, the work of Harold E. Palmer and his associate A.S. Hornby, who worked for many years in Japan; and second, the work of Otto Jespersen and other Scandinavian and Dutch Anglists and grammarians. Palmer provided the pedagogical foundations, Jespersen, Kruisinga, Poutsma and others provided the philosophical and grammatical support.[2]

[2] H.E. Palmer produced in 1939, with F.G. Blandford, a *Grammar of spoken English* (Tokyo and Cambridge), which deserved greater attention than it received. It was an admirable attempt to describe and analyse English using the techniques of phonetics and starting from the basis of speech, but it suffered from being produced in Japan, shortly before the Second World War.

During this same period, 1920–40, the use of the Direct Method rose and declined. There remained a few devotees of a purely oral teaching technique in which all teaching was carried out in the target-language, but essentially the oral approach exposed the excesses and defects of the Direct Method while extending its advantages.

Aside from the particular method adopted in language teaching, certain general principles became widely accepted during this period and so contributed to the orthodoxy we are describing. These principles included the following: — the importance of vocabulary selection procedures in order to limit the total vocabulary load of a given course, to concentrate on items likely to be needed and to avoid spending time on less useful items; the importance of grading the introduction of grammatical patterns so that the simpler and more productive patterns would be taught before the more complex or less productive ones; the value of phonetic symbols in pronunciation teaching; the assumption that the ultimate aim of the pupils was to be able to read works of established literary merit in the language concerned, and to write essays about them; the acceptance of speech as a vehicle for teaching and learning the language, coupled with the assumption that a high standard of performance in the spoken language would only be possible as the result of a prolonged stay in the country concerned.[3]

Classroom techniques for FLT had been worked out in considerable detail, and teacher-training normally included a good grounding in exercises, drills, games, remedial procedures and other teaching activities. It is particularly true of English teaching that the teacher's professional armoury was well-stocked. The underlying assumption was, and remains today, that the rate of learning by the pupil is directly affected by the professionalism of the teacher. It is the task of the teacher to know at any given moment exactly what point he is teaching, to assess how well each individual in the class is learning the point in question, and to improvise re-teaching devices and alternative modes of presentation to deal with learning which is taking place too slowly.

This view of the English teacher as a highly-trained professional had its dangers, especially in countries outside Europe where English was taught as a second language.[4] The professional idea presupposes a teacher who prepares his lessons meticulously in advance; who uses the coursebook as a guide but does not allow himself to be bound by it; who expects to improvise at short notice; who can dramatise his teaching; who

[3] This attitude is still widespread today, perhaps especially in universities, which generally require students taking a language degree to spend up to a year in an appropriate country. The prospect of the year abroad encourages some of those who teach to take the attitude that inculcating a practical command of the contemporary language is not an appropriate task for a university and that in any case it will be looked after by the year abroad. There are of course exceptions to this attitude, and some university departments have gained a reputation for producing graduates with exceptionally high-grade performance in the foreign language.

[4] It is customary to call a language a 'second' language in cases where it has special status even though it is not the mother tongue of the majority. Thus English is a second language in Nigeria or Hong Kong; French is a second language in the Ivory Coast or Senegal; both English and French a re FOREIGN languages in Sweden, or Greece.

is in complete and constant control not only of his own teaching but also of his pupils' learning. This kind of teacher represents the successful end-product of a teacher-training operation which takes in trainees of more than average intelligence and enthusiasm and sends them out into a profession where they have scope and status.[5]

Who were the teachers and how were they trained? In FLT in Europe, and in ELT overseas before 1940 the great majority were graduates, men and women trained in universities and colleges, who had specialised in French or German or English, or occasionally some other language. In most cases, but by no means all, they followed their university degree with a course of professional preparation as a teacher, in which they were given experience in teaching and taught the special skills and attitudes outlined above. The precise pattern varied considerably from one country to another, but these were its broad lines. Notice, however, that the university and college training was overwhelmingly directed towards the study of literature, possibly with a section of philology in order to enable the students to read the Chanson de Roland, the Nibelungenlied, or Beowulf. The teaching methods employed in the universities relied heavily on lectures, on translation, on essay-writing, on the reading of literary texts, and on *explication de texte*. (For a discussion of university language courses, see Stern 1968a). With very rare exceptions, the study of linguistics occupied no part of degree courses. The professional training to be a teacher rarely if ever extended the student's competence in the language, but concentrated on professional skills. Although trainee teachers rarely heard of linguistics, psychology was usually included, in relation to the study of mental development, the measurement of intelligence, and perhaps to a small extent the nature of personality, and group psychology.

Unfortunately, not all teachers of foreign languages or of English reached the high standard outlined earlier, even in the heyday of FLT as an élitist operation. Quite apart from individual shortcomings, many teachers went straight into the classroom without special training; the expansion and extension of FLT and ELT in ways which we shall shortly examine led to a great dilution of the teaching profession. FLT and ELT were geared to high-calibre teachers with a strong professional training. The assumption that all teachers were of this kind persisted into an era when such teachers were patently in a minority. Many of the difficulties of the profession in later years were caused by this assumption, and by the continued use of coursebooks which required from the teachers a standard of personal expertness which could no longer be supplied. It is worth repeating that those teachers emerging as products of the teacher-training system who did meet all the requirements which the system took for granted were excellent and devoted professionals. Their own pupils in turn included a sufficient proportion of real successes to justify the continuation of the process — to paper over the cracks, that is to say, for a few years longer. FLT in Britain, and also

[5] Probably the prime example of teacher-training for TEFL built round the oral approach and embodying the standards of professional excellence here outlined was to be found in the Institute of Education of the University of London. A team under Professor Bruce Pattison for many years constituted the only main centre of such activity in Britain.

British-based English language teaching (ELT) were subject to a special effect caused by the British attitude towards examinations. British school children in the higher academic streams are required to take examinations in their school subjects at age 16, and if they do not then leave school, to take further examinations at age 18 also, at a higher standard. These examinations are organised by several examining boards, which are loosely connected with various universities. The examiners are usually a mixture of school-teachers and university lecturers. The syllabuses of these examinations are published and vary little from one examining board to another. More important, they vary hardly at all from one year to another.

These examinations enshrined the orthodoxy of the period 1920–40, and in most cases they have still not been greatly altered.[6] At the lower level these examinations generally test translation into and out of the language, essay-writing, comprehension, acquaintance with prescribed texts, knowledge of grammatical points, and dictation, and they usually carry also an impressionistically-marked oral conversation test. At the more advanced level, the examination generally tests translation, essay-writing, knowledge of prescribed literary texts, and conversation once again.

Two problems arise. The first is technical: in the light of developments in techniques of test construction and examination statistics, doubt has been cast on the reliability and validity of these examinations as instruments for measuring individual performance. Second, and pedagogically much more important, teaching tends to concentrate on preparing for an examination. Indeed, so vital to the future of the individual pupil in Britain is his examination record that it became common for teachers to regard their educational task as being 'to get Johnny through his exams'. But the corollary of this concentration is that teaching methods and syllabuses tended to become petrified, and every suggestion of a new departure, a new technique, even a new coursebook, was assessed according to whether it was likely to deflect from the examination-passing grind.

These then, are some of the main characteristics of the orthodoxy, which became established in the period 1920–40: foreign languages only available for a tiny minority; teaching aimed above all at literary studies; a grammar-translation approach for FLT but the oral approach in English; most teachers of high calibre and with good professional training; in British teaching, examinations exercising a powerful influence on teaching; the standard of attainment of the best students very good indeed, but their number very small, and the fall-out rate very high.

THE IMPACT OF THE SECOND WORLD WAR

Out of the upheaval of the Second World War and the years immediately following there emerged conditions and attitudes which the old orthodoxy could not satisfy. During the period 1940–50 vast numbers of people willingly or unwillingly undertook

[6] For detailed information about one attempt at modernisation, see Otter (1968).

foreign travel, often for the first time in their lives. People came into contact with foreigners and began to accept and take for granted the existence of their languages. For many there arose a need to acquire a foreign language, and to do so not for the customary reason of studying its literature but for practical and even sinister purposes.[7]

As insularity broke down, international communication grew. Nations began to collaborate in many fields. International trade expanded very greatly. Radio, and later television, began regularly to carry programmes across frontiers. Foreign travel became the accepted habit of the majority instead of an expensive adventure for the few. And with the greater quantity of contact between people there grew a different attitude towards foreign languages. Perhaps the extreme example was that of the British, who in the space of a decade broke away from their linguistic isolationism, ceased to assume that 'foreigners ought to learn English' and began to show enthusiasm for learning and teaching languages for practical purposes.

It is perhaps worth noticing that much of the new familiarity with foreign countries was carried and encouraged by technological developments, especially in radio, television and techniques of recording. These same changes also had other, more direct effects on language teaching, but their first and vital influence was upon the attitudes which Europeans held about foreigners, foreign languages, and the accessibility of their life and culture.

CHANGED ATTITUDES TO FOREIGN LANGUAGE TEACHING AFTER 1950

In the wake of the experiences of the period from 1940 to 1950, four major changes can be distinguished in attitudes towards FLT and in its organisation.

First, foreign languages were seen by millions of people to be a matter of personal, individual, practical activity, of understanding and making oneself understood by other individuals in writing or (more often) in speech. From having been an esoteric accomplishment left to the academic minority, learning foreign languages became a practical task which anyone might tackle with hopes of success, and which might even lead to enjoyment, interest, gain, or social and political change. Henceforth there existed a strong current of popular assumption that learning a foreign language must entail command of the spoken and written language for purposes of communication and direct understanding.

Second, there grew up rather rapidly a widespread dissatisfaction with the existing system. Too few people, it was suddenly felt, spoke too few languages. Industry, the public service, education, science and technology all began to seek access to foreign languages. This meant that large numbers of people, in several countries, were being sought who combined the skill and experience of a particular occupation with practical ability in a foreign language. Few such people existed, and the need for them led

[7] Thus for example a considerable number of British service men were taught Japanese for use in the Far East in such practical tasks as monitoring Japanese fighter pilots' radio transmissions.

countries to look afresh at the means by which the educational system produced foreign language specialists. Criticism arose of the way in which only the academic minority, and only the literary specialists even among them, had access to foreign language learning; syllabuses were suddenly felt to be insufficiently concerned with teaching a command of the contemporary language; orthodox teaching materials began to seem old-fashioned; examinations were felt by some to exercise a stifling influence on language teaching; great numbers of people both inside and outside the educational world came to believe that language teaching needed to make drastic changes in its scope and its standards.

Third, by about 1960, public opinion was seeking the extension of foreign language teaching to groups of learners not hitherto considered able to benefit from it, namely, young children in primary schools,[8] and pupils in the lower academic streams. An extraordinary wave of public interest in teaching languages to young children grew up in Europe at this time (see Stern 1968b, 1969).

The great importance of this trend makes it worth describing in some detail the origins of the British experiment in primary school language teaching and the subsequent course of official policy. For more detailed descriptions see Spicer (1968); also two articles by R. Handscombe in the same volume.

In 1961, Dr. Leslie Farrer-Brown, at that time Director of the Nuffield Foundation, was interested in seeking ways by which his Foundation could help in the extension and reorganisation of language teaching in Britain which was clearly necessary, and he decided to look into the question of primary school foreign language teaching, several examples of which had been reported in the educational press. One of his first decisions was to commission a factual survey to discover what languages were being taught, to which pupils, by what teachers, with what materials, with what results, and in which places. An Argentinian graduate student of the author's, Mr. Carlos Lázaro, undertook the survey and found well over 100 primary schools already teaching a foreign language, with results varying from excellent to disastrously bad.[9]

In collaboration with Mr. George Taylor, then Chief Education Officer for the City of Leeds, Dr. Farrer-Brown arranged for a class to be taught French under optimum conditions.[10] Accordingly, during the summer term of 1962 a class of 15 boys and girls in a good school in an upper-middle class suburb of Leeds were taught French by being given all their schooling in French. The children were in the upper

[8] In this respect the teaching of English and of French as a second language, particularly in Africa, India-Pakistan and South-East Asia, was fifty years ahead of FLT in Europe. For years after returning from Ghana where English was the medium of instruction from approx. age 7, the author would be told by FL teachers that primary school children were intellectually unable to cope with a foreign language; that psychological damage would be caused to a child if he were taught a language while young; and similar statements of folklore that rationalised an emotional objection to the trend towards FLT in primary schools.

[9] This admirable Report was mimeographed; it is no longer available but in any case the situation has totally altered since then.

[10] See Mme. Marcelle Kellermann, *Two experiments on language teaching in primary schools in Leeds* (London, 1964).

academic bracket, having already passed the test at age 11+ and been selected for admission in the following September to a grammar school. Their teacher was professionally trained, a university graduate, a native speaker of French, and a devoted teacher who threw herself into the task of teaching the children. Additional equipment, aids and materials were supplied at need. Not surprisingly, the results were outstandingly successful: the children learned a great deal of French and in most cases began to 'behave in French'.

A further experiment was then mounted, to see what would happen in unfavourable circumstances. A group of schools in a poor area of Leeds were selected; the teachers were trained but not graduates and none was a native speaker of French; the children were predominantly from lower academic streams; the teaching of French was limited to a small number of periods each week. Evidently one could not hope for results comparable with those obtained by Mme. Kellermann. Nevertheless enough success was obtained for it to be felt that teaching a foreign language to unselected primary school children was both practically possible and educationally desirable. Two major requirements were identified from the Lázaro Report and the two Leeds experiments: first, there was an urgent need for classroom materials specially prepared for the age and aims of such children; and second, teachers needed to be given special training for the new task.

The national educational authority (the Department of Education and Science) was by now interested in this, and a two-part arrangement was set in train under which the Nuffield Foundation undertook to produce a full range of teaching materials, while the Department set up a Pilot Project embracing some 500 schools. Schools within this project would be given every encouragement and assistance; the teachers would receive in-service training including a stay of several weeks in France; the teachers would normally use the Nuffield experimental materials and would provide feedback information for the improvement and development of these materials. Schools not included in the Pilot Project were to be discouraged from introducing foreign language teaching unless they could show that they had sufficiently good teachers and resources to ensure success. The Pilot scheme has gone well. For an interim report on the results, see Clare Burstall (1968).

In the succeeding years attention has shifted to the problems facing the grammar schools when they receive pupils who already possess some foreign language competence; to those secondary streams which formerly offered no FL instruction but who now find this a necessity; and to the training of teachers for FL work in the Colleges of Education, when formerly only universities provided professional training courses for language teachers.

The experience of Britain differs in detail from that of other countries in Europe, but the general trend is shared throughout Scandinavia and continental Europe. It seems likely that by 1980, in most countries of Europe, virtually all children will learn a foreign language while at primary school.

The fourth major change in attitude which can be distinguished stems from the

enormous expansion of education in overseas countries where English or French is the medium of instruction and which for historical reasons depend on European styles of educational organisation. Since the end of the Second World War a large number of territories have become independent which were formerly possessions or dependencies of Britain or France. In every case, two things have happened: there has been a massive expansion of education so that great numbers of additional children now receive schooling; and English or French has been adopted as a national language and has been established in the educational system.

The practical effect of these changes has been to add by administrative decision millions of pupils to the ranks of those learning English or French, yet the decree is powerless to increase by an equal amount the numbers of teachers. The teaching professions in Anglophone and Francophone countries of Africa, especially, find themselves faced with massive problems of recruitment, training, dilution, overcrowding in schools, shortage of teaching materials, and similar difficulties. It looks as if they have survived the immediate impact of educational expansion without total breakdown, and some countries have displayed astonishing resilience in conditions of great difficulty. For the purposes of this article the point being made is that very great additional numbers of learners of French and of English have arisen in many overseas countries, who need these languages for use as a practical tool in the development of their countries. Both France and Britain (and of course the United States) have responded to these circumstances in a number of ways. The problem of teaching English or French as a second language, and the training of teachers and teacher-trainers for the purpose, are now major activities in a number of European countries.

In the changed climate after 1950 two further sets of events contributed to the evolution of language teaching in Europe. One was the development of a wide range of aids and equipment for use in teaching; the other was the sudden ferment in linguistics.

THE IMPACT OF TECHNOLOGY

Before 1950, the only technical aid that seemed to be of any interest to the language teacher was the gramophone. There were available a number of discs of literary works recorded by poets and actors, and a much smaller number of discs of language teaching exercises and courses. Enterprising teachers could and did embellish their classes with authentic and well-produced recorded examples of the language. But as far as the teacher was concerned, gramophone records could only be played, not made. It was the emergence on the commercial market at a reasonable price of magnetic tape recording equipment that made a vital difference. Now the teacher could record and play back the performance of his own pupils; he could give new meaning to those parts of his course that dealt with the spoken language.

Writing in 1969 it is difficult to recall the attitudes which many European teachers qeld even ten years ago. Yet the contribution of technology was not quickly or easily

appreciated. The tape recorder found its way only slowly into school classrooms; teachers were not, in the mass, quick to assimilate the new process; it needed several years before even a few European publishers came to accept the need for recordings to accompany their printed books; the exploitation of tape recording and the invention of further applications of technology to teaching was confined to a small number of centres; only very recently has educational technology been accepted as potentially valuable to all teachers, not the prerogative of the affluent few. And European teachers, it must be admitted, do not take easily to equipment, which they tend to label as 'gadgets' or 'gimmicks'.

In the space of ten years, however, the list of aids and equipment available to teachers has grown very rapidly. In 1960, only the gramophone and the tape recorder could be cited; now the list is long, and open-ended: language laboratories; audio-visual techniques, marrying recordings with visuals; film-strips and slides; 8 mm films and film loops; radio; television; videotape recordings; programmed instruction; teaching machines; computer-assisted instruction; and doubtless other devices still to be invented and exploited.

The biggest single contribution of technology to language teaching is probably the language laboratory. Although language lab installations are not nearly as widespread in Europe as they have become in the United States, the point has now been reached where the profession accepts them as potentially valuable for language teaching. Not the least reason for this acceptance is that language labs obviously have something to do with the new aims in FLT, which place a heavy emphasis on competence in the spoken language. But four kinds of problems continue to be met by those who advocate the use of language labs: problems of cost, maintenance, materials, and teacher training.

European countries generally face economic difficulties. In consequence, few of them can encourage or permit unlimited public spending on language teaching technology. The introduction of language labs on a wider scale will not be possible until the financial climate improves. Nor does a school find it easy to ensure continuous maintenance services for sophisticated equipment. In most towns in Europe it is exceedingly difficult to obtain the services of an electronics engineer at short notice, even if the money is there to pay him. There is a serious lack of teaching materials for use in the language lab. Courses devised for American college students are generally not acceptable in Europe, not just because of the accent of the recorded teacher, but because the aims, the rate of teaching and the whole learning-style of Europeans is different from that of Americans, in ways which are hard to analyse but which undoubtedly make American materials difficult to use. The problem reflects no more than differences of culture. It takes a long time to produce language lab materials. One consequence of the situation is that large numbers of teachers, faced with a language lab and classes of pupils but having no suitable materials, have embarked upon the task of writing and recording their own. It is estimable that so many should make the attempt, but it must be admitted that not all are successful and that many

teachers have become dissatisfied with the whole technique as a result of not possessing and being able to devise suitable teaching materials.

The nub of the matter is of course the teacher. It is not enough for the teacher to learn how to manipulate the switches and controls of his particular installation: he has to be aware of the rôle of the language lab in the wider framework of the new outlook on language teaching. A teacher whose general policy is to continue to use the grammar-translation method is not likely to take advantage of the real value of the language lab.

It has taken ten years for the value of technological aids, and their place in the overall pattern, to be understood and accepted in Europe generally. Such progress as there has been is due to the energy of a small number of individuals and a small number of centres, principally those at Paris (notably P. Rivenc and J. Guenot at the Centre de Recherche et d'Etudes pour la Diffusion du Français, G. Capelle, D. Girard and E. Companys at the Bureau pour l'Etude et Liaison), Besançon (B. Quemada), Strasbourg (C. Bylinski), Lille (H. Adamczewski), Utrecht (R.S. Mossel), Stockholm (M. Gorosch), London (Miss Mabel Sculthorp at Ealing, J.B. Adam and A.J. Shawcross at Westminster), and Manchester (J.B. Hilton).[11]

It is the general experience that when all the necessary prerequisites are present (maintenance facilities, appropriately trained staff, suitable materials) the use of language labs makes possible an important increase in the effectiveness of language teaching. But many schools and colleges have attempted to use them before the conditions for success were present, and in some cases disillusion with new aids and methods has been the result. The key to the difficulty lies in teacher education. As yet few professional courses of initial training for teachers give adequate instruction in the rôle of educational technology in language teaching, while in-service training courses reach only the enthusiastic few. Nevertheless progress is being made, and language labs are on the way to becoming standard equipment for language teaching in secondary and higher education.

THE IMPACT OF LINGUISTICS

Just as educational technology, evolved in the period after 1950, began to influence language teaching, so too linguistics evolved at much the same date and had a parallel effect. But in the case of linguistics, as far as the European orthodoxy of language teaching is concerned, there had existed for very many years two strands of continuity of a linguistic nature. These were (a) the European linguistic tradition of de Saussure

[11] In Britain, the body of Her Majesty's Inspectors of Schools have been instrumental in leading the FLT profession to accept modern methods in general and language laboratory techniques in particular. By no means every country has an inspectorate which leads: their influence in many places is conservative and against change. The Staff Inspector for Modern languages for many years (Dr. D.C. Riddy) and his successor (Mr. Peter Hoy), together with Mrs. E. Parr and Mr. S.J. Jones, are responsible for much of the progress which has taken place in Britain.

and the Prague School; and (b) the strong European tradition in phonetics. It would not be accurate to suggest that linguistics had no influence on language teaching until after 1950; what can be maintained is that after this date the influence of linguistics on language teaching was different in kind and much more direct than it had previously been.

Of course, much hangs on how one defines 'linguistics'. For the purpose of this article one can recognise three phases of development in linguistic studies in Europe over the past century. The initial phase is the rise of philology and the perfection of techniques for describing the historical development of languages and their interrelationships, by the analysis of written texts, generally of literary value, from earlier times. The final phase is the emergence of theoretical and descriptive linguistics as a scientific discipline after c. 1930. Between these two extremes lies a second phase in which the foundations of modern linguistics were being laid by the work of de Saussure, Troubetskoy, Baudouin de Courtenay, and many others.

This second phase was important for language-teaching in Europe because of the work of a particular group of scholars, among them Henry Sweet, Otto Jespersen (1949), and Harold E. Palmer. These scholars were philologists of distinction, acquainted with the new ideas in linguistics, who devoted a great deal of thought to the description of contemporary language, above all to the detailed and precise description of the spoken language, and to the application of these descriptions to language teaching. It was more especially in English studies that these early linguists made their mark, and a strong tradition of Anglistic studies grew up in Holland and Scandinavia. Language teaching in Europe, then, and especially the teaching of English, had a fifty year history of support from philology applied to the description and teaching of the present-day language, a history which culminated in the publication of H.E. Palmer's *Grammar of spoken English* in 1939, and Zandvoort's *Handbook of English grammar* in 1945. The work of H.E. Palmer is particularly significant, since Palmer was concerned for over twenty years with refining and re-stating an analysis of contemporary English in ways that are both linguistic in their nature and yet tailored to the special needs of those who teach English as a foreign language.[12]

The other strand of continuity, which began in the nineteenth century and still exercises its effects today, is the European tradition of PHONETICS.

By 1920 the International Phonetic Association was strongly established. Although Paul Passy in France and Daniel Jones in Britain were the leaders of the association, a great many scholars in many countries adhered to its principles and used its alphabet and its techniques for the description and production of sounds, while thousands of teachers of modern languages employed some degree of phonetics for purposes of pronunciation teaching. Detailed descriptions of the sounds, inventories of sounds and systems of sounds of many languages were compiled, and since these were on a common descriptive basis, comparisons between languages were easily made. Books of

[12] A bibliography of Palmer's works, and a biographical essay by his daughter, are to be found in Palmer and Redman (1969).

phonetic drills and exercises were produced, and by 1940 a number of university modern language departments were requiring their advanced students to follow courses of phonetics, partly for their linguistic worth and partly for their effect in producing a native-like accent.

In retrospect this tradition of academic phonetics can be seen to have had, in Britain at least, a further important function. Phonetics provided an opening for those who were interested in rigorous studies of language form and substance, before university courses in linguistics yet existed. It thus created a reservoir of trained and language-oriented scholars against the emergence of linguistics as an independent study.

The European language teaching profession, then, in contrast to that of the United States, had had the advantage of the Sweet-Palmer-Jespersen line of development and the tradition of academic phonetics. But it did not undergo any equivalent to the process which occurred in the United States between 1950 and 1960, when the acceptance of structural linguistics became widespread.

Viewed from across the Atlantic, the American situation of c. 1955 was an interesting one. Advanced work in linguistics, in the description of English and in language teaching seemed to have converged, perhaps especially in the output of the University of Michigan English Language Institute. The work of C. C. Fries on the structure of English, the affinity between the Michigan publications and those of B. Bloch, G. Trager, H. J. Smith, A. A. Hill and other linguists, the language teaching materials of R. Lado — these seemed to indicate that the principles of linguistics, the detailed linguistic description of a single language, and the preparation of teaching courses were closely allied. If this were so, then the slogan 'Make the teachers better linguists and their teaching will improve' might have some justification.

In fact, even if this analysis of the situation were accepted, within a short space of time each of the three elements became more sophisticated and diverged from the others: it was no longer possible, ten years later, to regard advanced work in theoretical linguistics, language description and language teaching as being in close relation to each other. But those who are familiar with the ways in which linguistics affected language teaching in the United States will find the European case-history very different.

The principal point of difference lies in the fact that American structural linguistics was never given wide acceptance in Europe, either by linguists or, still less, by language teachers. Two possible reasons for this may be cited, as they illustrate the European outlook. The first reason relates to the treatment of MEANING in structural linguistics. Where American linguists following Bloomfield strove to exclude consideration of meaning from linguistic analysis and tried to devise procedures which relied as little as possible on meaning, the European tradition was that meaning is central to language and that no linguistic theory was complete which did not take account of the complexity of meaning by incorporating a semantic component.

A second reason why European linguists hesitated to accept structural linguistics relates to the procedures of PHONEMICS. In many of the publications on phonemic

analysis it looked to unsymphathetic readers as if the PHONETICS underlying the analysis was unacceptable. The matter was complicated by a pre-existing use in Europe of the term PHONEME,[13] different in crucial ways from the structuralist usage. But sometimes phonemics looked to European eyes as if it was based on sloppy phonetics. Whatever the reasons, the crucial difference between American and European language teaching after 1950 is that American practice became dominated by structural linguistics for more than a decade, whereas European practice did not: it simply became more and more ready to be influenced by linguistics when an acceptable form should appear.

Not the least of the consequences of this difference concerns psychology. Bloomfield himself[14] had described conversation and discourse in terms of stimulus and response. When structural linguistics was applied to the construction of language teaching materials, further recourse was made to behaviourist psychology, to notions of language learning as a form of conditioning, to the need for over-learning through constant repetition, and to a generally mechanistic outlook on language teaching. The fact that these ideas made relatively little headway in Europe, even when an ideal vehicle for them (the language laboratory) was adopted, is due partly to a different outlook on the personal role of the teacher as a necessary mediator of the learning-teaching process, partly to the fairly widespread acceptance in Europe of the work and ideas of Piaget, but partly also to non-acceptance of structural linguistics.[15]

Thus the situation in Europe was that from about 1900 language teaching had been influenced both by the linguistic tradition of Sweet-Jespersen-Palmer and by the tradition of academic phonetics; and that when around 1950 American language teaching began to be strongly affected by structural linguistics and behaviourist psychology, no similar domination took place in Europe. Nevertheless, since about 1930 other developments had been under way which later gave a particular character to language teaching in Europe.

From c. 1930 J.R. Firth had been evolving and formulating his linguistic ideas. He worked for a time with the social anthropologist Bronislaw Malinowski, thereby running parallel with many American linguists who had worked in the field of anthropology. During the Second World War, Firth was closely concerned with producing materials for, and teaching on, emergency intensive language courses for Japanese and other languages, which brought him into contact with problems of language teaching. For many years he was Professor of General Linguistics in the University of London, at the School of Oriental and African Studies.

Firth's influence on linguistics in Britain and on the application of linguistics to the problems of language teaching was considerable, not least because very many of those who later occupied senior and influential places in the power structure of phonetics,

[13] See esp. D. Jones, *The phoneme, its nature and use* (Cambridge, 1950).

[14] In *Language*, in the British edition of 1935, p. 24 *et seq.*

[15] It is interesting to note that the publication of B.F. Skinner, *Verbal behavior* (New York, 1957), made little impact in Europe.

linguistics and applied linguistics were at one time pupils or subordinate colleagues of Firth himself. But there are two further reasons: first, his linguistic theories embodied ideas from within the main stream of European linguistics and were therefore readily assimilated (and conversely, not readily assimilated by Americans when his work became known in the United States). These ideas include the following: the centrality of meaning in the study and teaching of languages; the multiple nature of 'meaning'; the distinct nature of grammar and lexis; the interrelation of phonology, grammar and lexis; the importance of the appropriateness of any piece of language to the circumstances in which it was uttered or written — the notion that Firth called 'context of situation'; and the co-existence in every language of many 'varieties' of the language, each appropriate to different uses or functions of the language.

The second reason for Firth's importance in relation to language teaching is a more pragmatic one. The University of Edinburgh, with the assistance of the British Council, established in 1958 under J.C. Catford[16] a School of Applied Linguistics, the first focus in Britain for graduate studies in the areas of mutual interest between linguistics and language teaching. For some months Firth, who had recently retired from his post in London, was a member of the staff of the School and his ideas had a considerable influence upon the way its original syllabuses developed. In 1959, Dr. M.A.K. Halliday was also appointed to Edinburgh, as Lecturer in General Linguistics. His paper "Categories of the theory of grammar" had recently appeared in *Word* and constituted a refinement and development of many of Firth's views. Halliday taught the linguistics courses at the School of Applied Linguistics and engaged in regular seminars with members of the staff of the school, of the Department of English Language and General Linguistics, and of the Department of Phonetics. Thus the first major graduate centre of applied linguistics in Britain, and its first several generations of students, were strongly influenced by Firthian views on language.

But yet a further link should be noted. At this same period, M. Guy Capelle[17] was working in the Institut Français at Edinburgh. He became interested in the linguistic discussions developing in the University; in exchange he was able to contribute a first-hand knowledge of the far-reaching developments in language teaching methodology then being worked out at St. Cloud, in Paris, within the Centre de Recherche et d'Etudes pour la Diffusion du Français (CREDIF) largely under the leadership of Paul Rivenc.

Capelle and Rivenc were elaborating materials for teaching both English and French. They were involved, though separately, in the formulation of audio-visual teaching techniques, and sought to incorporate also as far as seemed helpful the essence of modern thinking on linguistics. There resulted from the personal and professional Anglo-French contacts made at that period a collaboration and a degree of mutual awareness and confidence which has repeatedly assisted developments in the organisa-

[16] Currently Professor of Linguistics at the University of Michigan, Ann Arbor.

[17] Later Director of B.E.L. (Bureau pour l'Etude et Liaison) in Paris, and currently Professor of French at the University of Michigan, Ann Arbor.

tion of research and development in applied linguistics in many parts of Europe. These may seem almost domestic notes. But in 1960 the number of specialists working in Europe as a whole was small. They really could hope to know each other. The import of this paragraph, then, is to suggest that French work on the creation of language lab courses and audio-visual techniques and British thought on descriptive and applied linguistics were closely in touch with each other, and that a European, neo-Firthian outlook on language to be studied as meaningful, as context-determined, and as exhibiting varieties, was broadly shared between the two centres in Edinburgh and Paris.

For some long time a major preoccupation of those who worked in the field which was already becoming known as 'applied linguistics' was to assess the most relevant and important contributions which linguistics could bring to language teaching. An early example of such a contribution was the development at Edinburgh by R. Mackin, J.C. Catford and others, of the notion of 'methodics', a framework for integrating linguistic categories and pedagogical techniques in the construction of syllabuses or course materials.[18] Here was a way of ensuring that the linguistic aspect of course-writing in some sense matched the pedagogical aspect. Another interest of specialists in applied linguistics was in the preparation of improved descriptions of the languages being taught, and comparative studies between languages. As the more practical aim of language teaching came to be taken for granted it began to seem to many teachers that existing courses enshrined and taught a 'classroom French', a 'classroom German' or a 'classroom English' whose shortcomings and deviations from actual usage could not be justified simply by the age of the pupils or the restricted opportunities of classroom practice. And since the exhaustive description of the complete language was clearly too vast to take the place of the inadequate description of older coursebooks, it became a major task to devise 'teaching descriptions' that were not only authentic and up-to-date but also reduced the size and content to dimensions suitable for incorporation in teaching courses.

But as linguistics became more and more theoretical and sophisticated, and as more teachers discovered something of the nature of linguistics, so it began to emerge that it was the ATTITUDES underlying linguistics, the view of the nature of language which linguistics embodied, that was important for teachers, rather than that all teachers should possess a complete grasp of the philosophy, theories and procedures of an advanced academic discipline.

For many language teachers, brought up in the literary and philological tradition of modern languages and of English, linguistics introduced them for the first time to an objective, scientific discipline; to theory-seeking; to an appreciation of rigorous methodology; to a realization of how few of our assumptions about teaching and about

[18] The germ of these ideas goes back to Palmer and Sweet, but the immediate source of inspiration was a set of articles by W.F. Mackey in *English Language Teaching* in 1950–51, sub-titled 'Selection', 'Grading' and 'Presentation'. For an extended treatment of METHODICS see Halliday, McIntosh and Strevens (1964).

learning are backed by satisfactory evidence. Not all found these attitudes congenial, but many did, and for them linguistics has provided the rationale for a radical change in outlook and attitudes.

At the same time it is commonly found that teachers who deliberately embrace not only new FLT aims and techniques but also an unfamiliar theoretical outlook on language want to be able to apply techniques of grammatical description to various texts that they may encounter. 'Learning about linguistics', in fact, carries for many teachers the personal need to be able to analyse according to an up-to-date descriptive technique. In Britain, this need was met, for many teachers, by Halliday's 'scale-and-category' theory in its earliest form and in its later development as 'system-structure' theory.[19]

Similarly, early versions of transformational grammar offered fairly simple descriptive techniques, especially while the distinction between 'kernel sentences' and transformations was maintained. But as transformational theory developed it became less easily assimilated by teachers for their analytical and descriptive purposes, whether in teaching English or any other language. Others have met the need by employing any of a large number of less canonised forms of textual analysis and description.

The influence of linguistics on language teaching, then, as far as the European teacher was concerned after about 1950, was of this nature: new and more practical aims in language teaching were becoming accepted, there were the beginnings of new institutions and organisations dedicated to the study of the relations between language teaching and linguistics, and the results of new sophistication in linguistics, psychology and technology were combining to make possible major developments in language teaching methods and materials.

THE EMERGENCE OF 'APPLIED LINGUISTICS'

From the welter of developments within and around the teaching of languages there began to crystallise in the years after 1960 a general consensus of the main elements embedded within the profession, and their interrelationship. It became clear that FLT must retain at its core the body of teaching techniques and pedagogical wisdom which had been built up through the experience of a century or more. Whatever help they might now expect to receive from outside sources, language teachers were essentially TEACHERS, with a unique and valuable understanding of practical ways of increasing the rate of learning on the part of the learner. It would of course be advantageous to know precisely why particular teaching techniques worked, and to be able to analyse learning and teaching with more insight and accuracy. But the conviction

[19] In its latest manifestation as 'Systemic theory', Halliday's descriptive apparatus has become extremely complex and is less easily grasped by those who are not professional linguists. See M.A.K. Halliday, "Notes on transitivity and theme in English", parts 1–3, *JL* 3/1.37–81, 3/2.199–244 (1967) and *JL* 4/2. 179–216 (1968).

remained that even without this understanding, teaching techniques were central to language teaching.

Yet it was also clear that certain disciplines, notably linguistics and psychology, and perhaps also social theory and scientific method, had something to contribute towards making language teaching more effective. Linguistics offered new attitudes towards language, improved descriptions of languages; the opportunity for contrastive analyses: in sum, a revised view of the very material, language, which was being taught. Psychology offered new insights into the nature of learning: a new view of the acquisition of language; improved techniques for assessing the extent and rate of learning; fresh intuitive leaps towards an understanding of the mental processes concerned with language; indeed, psychology had begun to merge with linguistics in describing and explaining language.

Social theories[20] were helping teachers to understand more clearly the interaction between language, social rôle and education, with consequent effects upon the planning and realisation of language teaching policy. Scientific method helped the Arts-trained language teacher to appreciate, and to incorporate into his own work, attitudes towards data, theories and models which would otherwise have been absent.

Over and above the elements of pedagogy and of theoretical support from other disciplines, it was becoming obvious that language teaching had much to gain from exploiting technologcial aids and appropriate equipment. The ability to record and replay sound and to display in various ingenious ways a number of types of visual image, and the mechanism for integrating both of these, at will, with any particular linguistic content, using any desired teaching technique — these facilities clearly offered the chance of increasing the effectiveness of the teacher's professional work. In spite of the fact that many teachers and schools would be unable to afford the cost of the more sophisticated aids, once their practicability was assured it was inevitable that great effort would be put into their refinement and sophistication.

Of course it is not being suggested either that THE WHOLE of these disciplines was relevant to language teaching, or that EVERY teacher needed to be trained in all of them. Certain areas of linguistics, some particular aspects of psychology, specific kinds of aids and equipment — these had been identified as potentially enlightening to some tasks within the total spectrum of language teaching. There had frequently been individuals who had brought from personal experience outside language teaching some particular flash of understanding. What was happening with the rise of this interdisciplinary approach was that a range of external sources of illumination were being institutionalised and given a regular, formal place in the profession.

Even at the time of writing the optimum extent by which particular types of teacher (and teaching) can benefit is not yet settled. Broadly speaking, one can say that the higher the educational background of the individual teacher, and the higher the pedagogical level at which he teaches, the more likely it is that training along these

[20] For example, the work of B. Bernstein, as in his article "Social structure, language, and learning"' in *Educational Research*, 3/3.163–76 (1961).

lines will be regarded as necessary to him. So a trainer of graduate teacher-trainers will be able to make valuable use of as broad and deep an acquaintance with this range of studies as he can obtain; while a non-graduate elementary school teacher would have the least obvious need for them. Even at this level however, there are many who believe that a good primary school teacher can improve the effectiveness of his teaching (whether of a foreign language or of the mother tongue) by a judicious and carefully constructed course in appropriate aspects of linguistics, psychology and educational technology. Here, then, were three distinct elements, only one of which — the spectrum of teaching techniques and methodology — would have been regarded before 1950 as being directly relevant to language teaching, but which were now all accepted as necessary to a modern over-view of the nature and practice of language teaching. Such an over-view has attracted the use of the label APPLIED LINGUISTICS in many parts of Europe,[21] and even where this term is not used, an analysis of this general kind is nowadays implicitly or explicitly accepted on a wide scale.

The use of a label may seem in itself relatively unimportant. But the fact that many of those concerned with what might be called the higher echelons of language teaching have been constrained to widen their catchment area for ideas so as to include linguistics, psychology and so on, on the one hand, and the design and exploitation of educational technology, on the other hand, means that a new interdisciplinary focus of attention has emerged. In the process there has grown up a range of organisational machinery which has accelerated and canonised activities which otherwise might have remained the private concerns and passions of individuals.

THE ROLE OF NATIONAL AND EUROPEAN ORGANISATIONS

In the period up to about 1960 the FL teaching profession in Europe was loosely organised through a single international organisation (The Fédération Internationale des Professeurs de Langues Vivantes — FIPLV) which linked national associations together. In Britain, the Modern Language Association, although its membership was only a small proportion of the total number of teachers, had had a long history as the organ of language teachers and as a leading voice in FIPLV. But the post-war ferment in language teaching was accompanied by the growth of two further sorts of organisation, both of which affected and in a sense competed with the earlier and simpler arrangements by which language teachers were in touch with each other and exchanged views about their profession.

[21] The term APPLIED LINGUISTICS has been used in a number of different ways. For a few it has been synonymous with 'contrastive phonemic analysis', for others, the use of language laboratories or audio-visual techniques. It is the author's impression that these interpretations are now only rarely held in Europe and that the analysis outlined in this section of the article is rather generally accepted by those who are engaged in this inter-disciplinary field. For example, The British Association for Applied Linguistics outlined its scope in terms very like these at its first annual conference held in Edinburgh in September 1968.

In assessing the new organisations, two types have to be distinguished: governmental or supra-governmental agencies, and new professional associations. Their rôles have been different but complementary.

It was in the teaching of English as a foreign language and French as a foreign language that governmental agencies made their first important appearance. In Britain, the British Council had since the late nineteen-thirties given encouragement to TEFL and even carried out a certain amount of direct teaching, notably in the Middle East during the Second World War, when many of the leading specialists in phonetics and English (among them D. Abercrombie, J.C. Catford, R.A. Close, P.A.D. MacCarthy and E.L. Tibbitts) were employed teaching English in Greece, Egypt and Palestine. But from the standpoint of this article the crucial time was from c. 1958 onwards, when massive support was given by the British Council to the provision of new facilities in British universities for the study of applied linguistics and the creation of new graduate qualifications, having in mind the need to increase the numbers and quality of British and overseas teachers of English as a foreign language. The School of Applied Linguistics was set up at Edinburgh with British Council subvention in 1957; funds were given to Leeds University in 1961 for the creation of a Chair in Contemporary English which led to graduate courses for specialists in applied linguistics; other assistance was given, notably by the secondment to certain universities of British Council specialists in ELT and by the provision of a great many studentships and scholarships enabling overseas students and teachers, as well as many from Britain, to follow high-level courses in applied linguistics and the teaching of English to speakers of other languages.[22]

The great impetus given to the teaching of English as a foreign language through the action of the British Council had no real counterpart in the teaching of foreign languages in Britain until the creation, in 1964, by the Secretary of State for Education and Science, of the Committee for Research and Development in Modern Languages. This body, under the chairmanship of Dr. Leslie Farrer-Brown, has done much to co-ordinate information about methods and techniques, and to encourage and sponsor research. Given the autonomy of local authorities in each town and county in Britain, in matters of educational policy, and the absence of powers of central direction, this Committee has been especially valuable since it has both provided a central focus for the language teaching profession and given the government much necessary information and advice on national needs and policies in language teaching. The Committee's two most important decisions so far have probably been, first, the establishment in London of a Centre for Information on Language Teaching; and second, the encouragement of research into the nature and methods of language teaching, even at the expense of proposals for financing the writing of additional teaching materials and

[22] The assistance of the British Council in this area has been very great but it can only be touched upon here. The policy behind the assistance to applied linguistics is due above all to Mr. H. Harvey Wood, Mr. R.A. Close and Dr. A.H. King, as successive incumbents of the post of Controller of the Education Division of the British Council.

courses. When it took stock of the present state of language teaching in Britain, the Committee was impressed and disturbed not only by the very small quantity of relevant research being pursued in this field, but also by the extent to which all current teaching practices rely on unstated AND UNTESTED hypotheses about learning and teaching languages and about the validity and effectiveness of the methods being used. It is investigation into these hypotheses that the Committee hopes to encourage in the coming years.

In France, the Département de la Coöpération, through Mlle. Jeanne Laurent, gave assistance similar to that provided in Britain by the British Council; but among language teachers the names of CREDIF and B.E.L. (the Bureau pour l'Etude et Liaison) are better known because it was they which carried out the main French executive action in this field. CREDIF became known above all as the place where Paul Rivenc, P. Guberina and Jean Guenot developed principles, techniques and materials for audio-visual language teaching, and especially the important pioneering course, *Voix et images de France* (Guberina and Rivenc 1961). B.E.L. was the dynamic organisation from which Guy Capelle and Denis Girard operated and became the leading French spokesmen and specialists in applied linguistics.

In addition to the British Council and its French counterparts, extremely important efforts were contributed from within the Council of Europe, an inter-governmental agency,[23] and especially through the Division of Higher Education and Research of the Council for Cultural Co-operation. Three kinds of activity in particular have been undertaken and nourished by the Council of Europe: (i) the holding of international meetings and conferences on topics within the whole field of language teaching and applied linguistics, for the purpose of disseminating and exchanging information and ideas; (ii) the publication of a number of books dealing with language teaching (many of these are listed in the Bibliography to this article and can be identified by having Strasbourg as their place of publication); and (iii) promoting the foundation of the International Association for Applied Linguistics. In all these undertakings, the work of Sven Nord has been paramount.

The International Association for Applied Linguistics (usually known as AILA, from the acronym of its French name) has acted as a catalyst. Set up at the close of the Congress of Applied Linguistics at Nancy in 1964, AILA's main function has been to encourage the creation of national associations of applied linguistics, so as to enable language teachers to organise themselves in terms of the new view of language

[23] The Council of Europe was established on 5 May 1949. Its aim is 'to achieve a greater unity between its Members for the purpose of safeguarding and realising the ideals and principles which are their common heritage and facilitating their economic and social progress'. At their Second Conference, in Hamburg in April 1961, the Ministers of Education of the member states (Austria, Belgium, Cyprus, Denmark, West Germany, France, Greece, the Holy See, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Spain, Sweden, Switzerland, Turkey and the United Kingdom) passed a resolution which began: 'The Ministers of Education express the conviction that greater importance than ever before must be attributed to increasing the knowledge of modern languages'. It also contained the recommendation that '... each country should stimulate linguistic and psychological research, the object of which would be the improvement and expansion of modern language teaching'.

teaching. The result has been the creation of national associations in France, Belgium, Germany, Scandinavia and Britain, as well as two associations (one French-speaking, one English-speaking) in Canada.

The sudden creation of professional associations for language teachers based on the acceptance of applied linguistics posed a great problem for the older national associations, adherents to FIPLV, whose interests and preoccupations had been formed in the days of the pre-War orthodoxy. The extent of the difficulty was clearly seen in the 1966 FIPLV Conference, held at Upsala. The Swedish association adhering to FIPLV was dominated by a progressive group whose ideas were in line with applied linguistics and no longer with the more literary-oriented outlook of the FIPLV in general. The effect of this was that the delegates to the conference were confronted by a programme largely conceived in terms of applied linguistics.[24] Many of them welcomed the experience; some felt threatened by it. The nature of FIPLV was changed, and that of many of its constituent national associations was also affected.

A further development has been the creation of Societas Linguistica Europaea, an international association concerned with more than just the applicational aspects of linguistics, which has been established largely through the initiative and energy of a group of linguists at Kiel University.

But in some countries of Europe another development was already challenging the orthodoxy of the teachers' associations. That was the emergence of small specialist associations catering for teachers of a particular language — in Britain an Association of Teachers of Russian was formed, then an Association of Teachers of German, then of Italian, then of English as a Foreign Language, as well as an Audio-Visual Language Association for those who wanted to specialize in the use of technology. Add to this the Language Teaching Section of the Linguistics Association of Great Britain and the British Association of Applied Linguistics, and the extent of the change from 1950, when only the Modern Language Association existed, becomes apparent.

It is too early to see where these developments are leading, even in one country, let alone over Europe as a whole. Doubtless there will be re-groupings and amalgamations as the stronger associations develop and the weaker ones disappear. Far more important than the tally of associations is the fact of their spontaneous creation and the extent of their international links. There now exist in Europe multiple pathways, some of them maintained by governmental and supra-governmental aid, by which ideas, theories, materials, questionings and answerings can be exchanged.[25]

It is no accident that these developments coincide with the growth of the idea of a unified Europe. The Council of Europe is an expression of this, but even aside from the Council there is ample evidence that more and more inhabitants of Europe are taking multilingualism for granted as a part of the shrinking of distances between

[24] The proceedings of this conference have been edited by Hans Jalling (1968).

[25] The creation and extension of these pathways is a monument to many people, but perhaps especially to a small group of national or international civil servants, not least M. Guy Capelle, M. Denis Girard, Mr. Max Gorosch, Dr. A.H. King, M. Sven Nord and Dr. D.C. Riddy.

people and the lowering of barriers. The rise of International (and multilingual) Schools, the campaign for an International Baccalaureate examination, the extension of the German Volkshochschule (adult education) language examination for use in other countries — these are some of the many signs of this general trend towards Europeanisation.

CONCLUSION: TOWARDS A NEW ORTHODOXY

It is still too early, in 1970, to see where the changes outlined in this article will eventually lead. Nor should the reader be beguiled by a catalogue of changes into thinking that every teacher in Europe now embraces all the new ideas. Far from it: very many teachers still teach, quite deliberately, and often successfully, according to the literature-oriented views which prevailed universally until c. 1950. Many more do so with reluctance, simply because they are circumscribed by unchanging examination syllabuses or by the unavailability of adequate new teaching materials or facilities for re-training.

Nevertheless, it is safe to say that irreversible changes have already taken place, and that a large and ever-growing number of teachers in Europe now accept different views about language teaching. Henceforth FLT will be affected by any and all relevant developments in linguistics, psychology, sociology, because the teacher-training echelons are increasingly geared to the interdisciplinary outlook of applied linguistics; foreign languages will increasingly be taught for practical use and for insight into other societies rather than for literary studies, perhaps they will even be taught THROUGH OTHER SUBJECTS; above all, the language teaching profession will regard itself as dynamic and changing rather than static and unchanging.

While these professional changes are being completed, the ultimate cause for them will be carried yet further forward: the idea of 'l'Europe unie' will become more of a reality; multilingualism will increase as Europeans regard at least one foreign language as a normal and essential component of their early education.

In this article an attempt has been made to chart the complex changes of recent years. Prediction is a fallible art: the one trend which seems clear and certain is that language teaching in Europe in the future will become more vital to the citizen's education, more practical in its nature, and more linguistic in its pedagogical foundations.

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3. J.O. Robinson, *An annotated bibliography of modern language teaching: Books and articles 1946-67* (London, 1969).
4. J.B. Kay, *Select bibliography* Printed as an Appendix to A.S. Hayes: *Language laboratory facilities* (London, 1968).

2) Consequently the bibliography which follows is a personal choice. It is restricted to books and articles published in books in Europe, and it includes some items which are rarely noticed but which seem to the author to be or to have been relevant to the development of language teaching in Europe since 1920.

3) Periodical literature has been omitted from this bibliography, except that it is preceded by a list of journals which have been especially valuable sources of reference in recent years.

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